





Volume 4, Number 11

November 1989

#### **FEATURES**

18

PROJECT OVAL BURNS

by Steve Pond

24

MICKEY THOMPSON OFF-ROAD GRAND PRIX

by Rick Houle

36

**BUDGET RACER** 

by Dick Brinton

42

RCRC ASCOT SPRINTER **PREVIEW** 

by Wally David

44

RC10 VS. JR-X2 SHOOTOUT

by Rick Houle

56

**CATCHING THE BUS** 

by Wally David

58

**NORRCA OFF-ROAD** NATIONALS

by Rick Houle

66

JG DIRT-OVAL CHAMPIONSHIP

by Danny Batinich

68 **SPORTSMANSHIP** 

by Dan Moynihan

83 DIRT OVAL BUYER'S GUIDE 100

SIDE-DAM TECHNOLOGY

by Wally David

102

**PROJECT PANDA** 

by Steve Pond

106

**DIRT OVAL MOTORS** 

by Steve Pond

112

KYOSHO SLINGSHOT

**PREVIEW** 

by Rich Hemstreet

124

DIRT OVAL TIRES

by Wally David

136

EASTERN DIRT MOD

by John Fisler

## TRACK REPORTS

30

**CUSTOM WORKS** DOMINATOR

by Wally David

72

YOKOMO YZ-10

by Joe Bruni



78

PARMA PRO PANTHER 12

by Mike Lee

92

KYOSHO ULTIMA PRO

by Bob Gagne

## **DEPARTMENTS**

6

**EDITORIAL** by Chris Chianelli 54

**SCOPING OUT** 

by John Rist

70

TROUBLESHOOTING

by Fred Murphy

114

WHAT'S NEW

118

**HOT TRACKS** 



8 **LETTERS** 

13

PIT TIPS by Jim Newman

16

**PUBLISHER'S PAGE** 

by Louis DeFrancesco

20 TRUCK STOP by Dave Sproul

40 READERS' RIDES

140 DIRT DIGEST by Bill O'Brien & Bob Kane

164 **INSIDE SCOOP** by Chris Chianelli

202 AD INDEX

ON THE COVER: Center: Losi JR-X2 flying past the Associated RC10 during their shootout. (Photo by Rick Houle.) Above left: Custom Works Dominator with paint scheme by the award-winning Bill Henning. (Photo by Wally David.) Top: Joe Bruni's YZ-10. (Photo by Steve Pond.) Bottom: Heel-to-toe action at the NORRCA Off-Road Nats. (Photo by Rick Houle.)



by CHRIS CHIANELLI



ELCOME TO OUR second annual Sideways Spectacular—the Dirt Oval Special, that is. It seems that the thrill of "slide and go" has far from worn off. Wally "Ollie" David and Smitty Pond cover some of the technical aspects specifically relating to setting up an oval machine, like dirt-oval motors and tires, and side-dam technology. We've also included a Track Report on the updated Custom Works Dominator and a dirt-oval conversion of the ¹/s-scale Kyosho Burns. Even "Budget" Brinton kicks in with an econo dirt-oval RC10 conversion.

On a down note (but one that must be mentioned), one of our contributors, Danny Batinich, has told us about a rash of R/C car thefts out in Southern California. Obviously, ¹/10-scale cars are easy to conceal, as is the support equipment, like chargers and batteries. The items we use are small and expensive—prime targets for lazy creeps who think nothing of taking things that someone else has worked hard for. Danny's entire R/C stable, including his new, custom-built Rocket Car, was ripped off from his garage. If somebody tries to sell it to you, turn him (or her) in. R/C equipment is rising on the thieves' hit list. Be careful of buying equipment from someone you've never seen race who suddenly shows up at your track selling R/C cars. A tip-off could be somebody selling off-road cars at an on-road race.

A particularly interesting "Reader's Ride" came from John Fisler of Schenectady, NY. We liked the body of his 1/10-scale Eastern Dirt Modified mud bus so much that we asked John to do a short construction article on the car. He did, and it's in this issue.

If you're one of the "we don't need no stinking brakes" drivers who enjoy hanging the rear end of a sprint car out in the turns while six other drivers are doing the same thing on all sides of you, then by all means, hang out, 'cause this rag's for you!

Message from the Ayatoliah: He commands, "ROUND AND ROUND YOU GO, 'TIL YOUR MOTORS BLOW!" ■



Group Publisher LOUIS V. DeFRANCESCO, JR.

Publisher DR. LOUIS V. DeFRANCESCO

Associate Publisher YVONNE M. MICIK . . . .

Senior Editor RICH HEMSTREET

**Executive Editor** CHRIS CHIANELLI

**Associate Editors** STEVE POND WALLY DAVID

**Technical Editor** RICHARD URAVITCH

Copy Editors LYNNE SEWELL KATHERINE TOLLIVER

**Editorial Assistant** SALLY WILLIAMS

Art Direction ALAN J. PALERMO

**Assistant Art Director** MARY LOU RAMOS

rt Assistants MICHAEL MAKUCEVICH SARA CLARKE

Typographer JACKIE MOSIER

Systems Manager ED SCHENK

Advertising Director JASON STEIN

Advertising Sales Coordinator JULIA KEISMAN

Advertising Coordinator MARY REID

Advertising Production Manager PENNY CURCIO

Circulation Manager KATHLEEN RHODES

SUBSCRIPTION PRICES:

U.S. & Possessions (including APO & FPO): 1 year (12 issues) \$25.00 2 years (24 issues) \$47.00 Outside U.S.: 1 year \$35.00; 2 years \$67.00 Payment must be in U.S. funds.

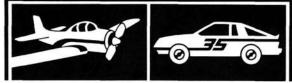
RADIO CONTROL CAR ACTION (ISSN 0886-1609) is published monthly by Air Age, Inc., 251 Danbury Rd., Wilton, CT 06897. Connecticut Editorial and Business Office, 251 Danbury Rd., Wilton, CT 06897. Phone 203-834-2900. FAX: 203-762-9803. Y.P. Johnson, President; G.E. DeFrancesco, Vice President; L.V. DeFrancesco, Secretary; Yvonne M. Micik, Treasurer. Second Class Postage Permit paid at Wilton, Connecticut, and additional Mailing Offices. Copyright 1989 by Air Age, Inc. All rights reserved.

CONTRIBUTIONS: To authors, photographers, and people featured in this magazine, all materials published in Radio Control Car Action become the exclusive property of Air Age, Inc., unless prior arrangement is made in writing with the Publisher. The Publisher assumes no responsibility for unsolicited material. Only manuscripts and supporting material accompanied by a SASE will be returned.

ADVERTISING: Advertising rates available on request. Please send advertising materials, insertion orders, etc., to *Radio Control Car Action*, Advertising Dept., Air Age, Inc., 251 Danbury Rd., Wilton, CT 06897. Phone: 203-834-2900. FAX: 203-762-9803.

CHANGE OF ADDRESS: To make sure you don't miss any issues, send your new address to *Radio Control Car Action*, Subscription Dept., P.O. Box 427, Mount Morris, IL 61054, six weeks before you move. Please include the address label from a recent issue, or print the information exactly as shown on the label. The Post Office will not forward copies unless you provide extra postage. Duplicate issues cannot be sent.

POSTMASTER: Please send Form 3579 to Radio Control Car Action, P.O. Box 427, Mount Morris, IL 61054.



# MERICAN MO

KITS		Novak		
Associated		T1X Speed Control	\$	150.00
12L Basic Graphite	\$139.99	T1 Speed Control	\$	125.00
10L Basic Graphite	\$129.99	T4 Speed Control	\$	90.00
	\$169.99	NBR 2X Receiver	\$	50.00
10L Basic Graphite RC10 with Ball Bearings		ProTech		
	\$179.99	AC/DC Peak Charger	8	89.50
RC10 Graphite with Ball Bearings	\$199.99	- Acros reak charger	_	00.00
YZ10 Yokomo	\$269.99	Tekin, Novak, & MRC Chargers in stock! Call for	nrie	
Bolink	\$179.99	Texin, Novak, a mine chargers in stock: Can for	price	.63.
Eliminator 10 Graphite	\$179.99	Andy's		
Losi	0400.00	Yokomo YZ 10 A-Arms	S	11.95
JRX-2	\$189.99	RC 10 Front A-Arms		11.95
Tamiya		RC 10 Rear A-Arms		11.95
Mud Blaster	\$139.99	Ultima Front A-Arms		11.95
Black Foot	\$119.99	Oninia i font A-Arris	-	11.00
Lunch Box	\$109.99	D		
Clod Buster	\$279.99	Branson Ultrasonic Cleaner		79.95
ASSEMBLY AVAILABLE		NEW! NEW! NEW!		79.95
Power Push		Bud's		
Matched Ni-Cad Packs				69.95
4-Cell SCE 1700 MAH	\$ 31.00	Motor Analyzing Dyno		10.95
6-Cell SCE 1700 MAH	\$ 39.00	Bi-Level Super Wing	Š	
	\$ 54.25	Mini Bi-Level Wing		
7-Cell SCE 1700 MAH		Rear Off-Road Wing	\$	
4-Cell SCR 1200 MAH	\$ 26.00	TOJ Stabilizing Wing	\$	
6-Cell SCR 1200 MAH	\$ 39.00	Horizontal Wing Wire Mounts	\$	4.95
7-Cell SCR 1200 MAH	\$ 45.50	Prebent Wing Wire with mounting buttons	\$	3.75
Power Pack		Rear Adjustable Roll Bar Kit for		
RCBP2 Max Pack 7.2V 1400mAH	\$ 19.99	TRC PRO-12 & Bolink 10	\$	11.95
Watts Left		Pinned Differential Drive Ring Kit, 1/10 or 1/12	\$	3.00
Single Cell Discharger	\$ 99.95	Ultra Precision Diff Balls, 5 millionths tol. 16 pcs.	\$	2.50
Single Cell Discharger	9 55.55	Differential Thrust Cone	\$	3.95
Motor Rebuild Service	\$17.00	Super Lightweight Wheel Hub	\$	8.95
New brushes and springs	\$17.00		=	_
Disassemble and clean motor		Cichon		
Disassemble and clean motor     Diamond true the commutator		Pro Diff Tube for RC 10	\$	19.95
Remagnetize the magnets		Nylon Screw Set for RC 10		
		12 #4-40 x 3/8 Wheel Screws		
Dyno test		4 #4-40 x 3/8 Steering Servo Screws		
One day service		2 #4-40 x 3/8 Rear Swaybar Screws		
Includes shipping to all 50 states/Outside U.S.	add \$3.00	4 #4-40 Upper Shock Nuts	\$	2.95
		SPECIAL!	=	
Armature Tune-up	\$6.00	Houge		
<ul> <li>Commutator diamond trued</li> </ul>		Ball Bearing RC 10 Steering Bellcranks	\$	26.95
Cleaned		All JRX-2 Parts in Stock!	_	
Includes shipping to all 50 states/Outside U.S.	add \$1.00	Proline		
		JRX-2 Rims Front or Rear	\$	5.95
Futaba		RC 10 Rims Front or Rear	Š	5.95
Magnum Jr.	\$ 99.99	ProTrack		
		JRX-2 Wide Bumper	\$	5.95
Magnum Jr. with MC 112B Speed Control	\$139.99	RC 10 Wide Bumper	Š	5.95
Magnum AM	\$229.99	Swept Back Nerf Bars		14.00
Dymond		Robinson	-	.4.00
Hand Wound Modified Motors				2.00
14T Double	\$ 54.95	Syntech Shock Fluid	ş	3.00
15T Double	\$ 54.95	48 Pitch Pinions	2	2.95
17T Triple	\$ 54.95	All RC 10 Parts in Stock!	_	
	\$ 54.95 \$ 54.95 \$ 54.95	Trackmaster	-20	12.95

== THE PARTS STORE. =

We couldn't possibly list all the performance R/C car parts we stock. So we listed a few. If you don't see what you need, call anyway. We might just have the part you're looking for. The kits and packages we assemble are only high-performance radio control racing machines. These R/C

Add \$5.00 postage and handling to your order. Prices subject to change without notice

Mastercard • VISA • Discover UPS C.O.D. on request.

Money Orders for mail order. Personal Checks with two week processing.

Send Mail Orders to: American Modele 7559 Pearl Rd.

Middleburg Heights, Ohio 44130

machines are capable of competitive race speeds and should be operated with care. We'll stand behind what we sell. Call us for technical help and parts help. We're happy to be of assistance at American Modeler.

All packages sent UPS. UPS Next Day Air, \$15.00 plus \$1.00 per lb. extra. Ohio residents add 7% sales tax.

Telephone Order Hours: Monday-Friday: 11AM to 8PM Saturday 11AM to 5PM

(216) 826-3088 FAX: (216) 826-1055

#### QUALITY GRAPHITE PARTS

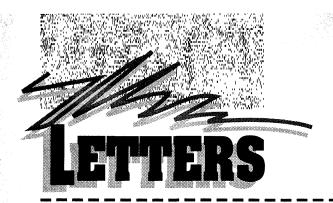
We custom-manufacture 1/8, 1/10 and 1/12-scale chassis and parts to your designs. Use for 12-L, RC-10, Optima Mid, Ultima, Ovalsprint. On and off-road.

Stiff, light-weight material with excellent diagonal twist strength. Cylinder battery slot optional. NO GLASS OR FILLERS.

#### MR. D.A. GRAPHITE PRODUCTS

1235 Portola Avenue Spring Valley, CA 92077

Phone: 619-562-6123 Mfg & Dealer Inquiries Invited



#### WHERE TO WRITE TO US

If you're writing to the editors (and we'd love to hear from you), please be sure to address your letters to "Letters," *Radio Control Car Action*, 251 Danbury Road, Wilton, CT 06897. Only subscription orders and inquiries are handled by our Customer Service Department in Mount Morris, IL; other mail addressed there must be forwarded to Connecticut, which leads to long delays

#### **August Eagle Eye**

On page 86 in the August '89 Maxxum report, the antenna is on one side, but in the bottom picture, the antenna is on the other side of the car. That's the only mistake I've found so far.

JR ACUNA

Fort St. John, B.C., Canada

JR, you were the only one that caught the flipped slide. Very good; you win!

CO

#### **A Few Questions**

Yo dudes! I love your mag! "Readers' Rides" is a great idea! The thing I love most about your mag are those wild projects you dream up. The Behemoth is awesome!

I have a few questions:

- 1) I'm planning to get an Advance Engineering Custom Street Machine Rolling Chassis. Could you please recommend a motor for me? I'll probably just drive it on side streets and in parking lots, but the motor I'm looking for should be fast, not incredibly expensive and last at least 5 minutes on one of my 7.2V 1200mAh batteries.
- 2) Could you do some more projects with the Street Machine Rolling Chassis? I love Tai Sugahara's Indy car.
- 3) Is the LeMans 360ST a good motor for my Lunch Box?
- 4) Concerning your Eagle Eye contest: On page 194 of the August '89 issue in the advertiser index, you say the ad for *RCCA* decals is on page 180, but I found it on page 80.
- 5) One last thing: I'm looking for a pen pal (or two, or three), so could you please print my address and ask anyone else who reads your mag and would like a pen pal to write to me? I'll answer all the letters I get.

Thanks for your time, dudes. Catch ya in the winners' circle.

**CHRIS HILL** 

609 - 2400 New St. Burlington, Ontario, Canada L7R 1J8

Chris, glad you liked "Bad Brain" O'Brien's Behemoth. He has more in store. Now on to your questions.

- 1) A stock wind is what you need; however, many of the currently available stock motors have a high degree of timing (34 degrees and more) cranked into them, which will shorten their life span. Owing to their more conservative timing, motors like the LeMans 20-degree Super Stock and the Speedworks Speedway Stock (5-degree, 25-turn) will last longer. They'll also give you greatly improved performance over the 540 Mabuchi.
  - 2) Sure.
- 3) Although the 360ST has good torque and is an inexpensive motor for <sup>1</sup>/10-scale trucks, it's really a bit much for the smaller <sup>1</sup>/12-scale Lunch Box. Again, stick with a stock wind, and, remember, the 360 is a 550-size can and is illegal at most sanctioned races, if that makes a difference to you.
- 4) Sorry, wrong answer. That was a real typo, not the intentionally placed Eagle Eye.
- 5) OK, Chris, you want correspondence, you got it! If anyone wants to write to Chris Hill, his address is printed above. Chris's mailman better brace himself!

CC

#### **Budget Shootout**

Could you do a shootout between the presently available budget off-road cars like the Raider, Falcon and FX-10? It would be great to know which car is better for the money.

SHARAD MATHUR Montreal, Quebec

Sharad, we're putting a shootout into the works between the Raider, Falcon, Sonic Fighter and the Cyclone—all with

matched electronics. Shootouts of this type require a lot of preparation, so be patient.

CC

#### Trash the Tree

I enjoy your magazine every month. It's the best R/C magazine on the market. Keep up the good work.

Now, on to the problem. I own a Blackfoot and I have a lot of fun with it, but I've found a weak spot in the left and right front arms (part Nos. J2 and J4), where the front shocks are mounted. I've broken both of these parts, and I've had to buy the whole J tree in order to get the replacement parts I need. This gives me a lot of extra parts that I have no use for. Are there any after-market parts that will last longer? Thank you for any help you can give me.

BOB CENZANO Rochester, NY

Bob, CRP makes Blackfoot suspension arms that come separately and are also stronger than the original parts.

CC

#### **Nose Dive**

I love to race, and I'm just looking into buying the new Maxxum. Will its heavy nose cause trouble on jumps, since it's a front-wheel-drive car? Thanks.

ANDY WEAVER
Calhoun, GA

Andy, if you run at a track with many jumps, I'd stay away from the Maxxum, or any other front-wheel drive car, because their front weight bias causes them to take jumps less than gracefully. However, many off-road tracks seem to lack jumps and often border on being dirt roadcourses. If this is the type of track you run on, then the Maxxum could do very well. Dick Brinton runs on such a track with a modified Maxxum, and he often places in the A-Main—in the 4WD class!

(Continued on page 10)

# LOWEST **PRICES!**

All Associated, Losi, and Agitator parts 30% off list!

TRINITY: Stock-\$14.50 Modified-\$42.00

# AGITATOR PRO



\$169.99



\$139.98



JR:X2

\$149.89



\$203.98

# **GRAPHITE WB**



\$167.99

## Speed Control



T-1X-\$119<sup>99</sup> T-1 - \$ 9832 T-4- \$ 62<sup>99</sup>

Shipping & Handling: UPS Ground 4.75; UPS Air add 11% of price to 4.75; all orders will be shipped the next day

How to order: i)Send cashier's check, money order, or personal checks. Personal checks will cause delay. ii) C.O.D. add 3.09, cash, money order, or cashier's check ONLY, TEL:(916)4512575

Store Hours: M-TH 2:00 to 7:00; F 2:00 to 4:30; Sat 2:00 to 5:30; Sun Closed

CA resident add 6.5% tax

THE FINEST R/C 8148 B 14th Ave Sacramento, CA 95826



(Continued from page 8)

#### Gas Pool

Your magazine influenced my decision to buy the R/C cars I have today: the Tamiya Clod Buster and the Advanced Agitator.

I recently saw "The Dead Pool," and it was great. On page 56 of your August '88 issue, you state the car used in the movie was an RC10 using a Reedy motor. When I saw the movie, the car sounded and ran as if it had some kind of gas engine. Could you explain?

> TAYLOR GOODMAN Midlothian, VA

Taylor, they can make an RC10 or anything else sprout wings and fly coast to coast if they want. That's Hollywood and special effects.

CC

#### Gas Break-In

I love your magazine; it's the best! I'm a 15-year-old R/C enthusiast, and I just bought a Kyosho Burns and an O.S. .21 VF-BR engine. My problem is that I'm not sure how to properly break in an engine. I've read many books on this, and some say to put the engine on a stand with a propeller while others say to just put the engine in the car and run the car in circles with different needle settings.

JOHN MEANY Chicago, IL

CC

John, to play it safe, break in the engine with a wooden balanced prop (an 8x4 or 8x6 size) mounted on the proper stand and run it for three or four tanks. The prop blast does a lot to control the extra heat during the initial runs; so does a slightly rich setting. Then put the engine in your car and continue to run it on a level surface for another four to six tanks before you hit the off-road circuit. Some will say that this is too much precaution, but it can't hurt, especially at today's glow-engine prices!

**High-Level Shoot-Out** 

"The world's premier R/C car magazine"-that it is. I like your magazine because it has advice for the beginner and the expert. Also, everyone at Car Action seems to really care about the future of R/C, and I think that's great.

Could you do a 2WD shootout between the JR-X2, the Graphite RC10 and the Ultima Pro, like the 4WD shootout in the December '88 issue, with the same motors, electonic speed controls, batteries and chargers?

If you could arrange the shootout, I'd be really grateful. I'd like to say as long as I'm in R/C cars, I'll be reading every issue of Car Action.

> **BRIAN JOHNSON** Florence, SC

Brian, you've read our minds! We're already working on a shootout between the Graphite RC10, the JR-X2, the Ultima Pro, the Top Cat, the Stage II, and we're even going to throw in the Maxxum to see how it will hold up. As you suggested, they'll all be with identical electronics. Thanks for the feedback on our mag.

#### **Hirobo Parts**

I bought an Allied Mid 4 Turbo from Dr. J's out of California. I tried ordering parts from Dr. J's, but they can't get the parts from Japan. I tried Circus Hobbies, and they don't carry it yet. I paid over \$300 for this car and can't run it. Where can I get these gears or some similar ones that will fit?

> TRAVIS AUTHEMENT Houma, LA

Travis, Hobby Dynamics (4105 Fieldstone, Champaign, IL 61821) is now handling the Hirobo line, and they've told us that a complete stock of parts is available. We'll also be featuring Hirobo cars in upcoming Track Reports.

(Continued on page 12)

# TWO CHARGERS IN ONE.



- One full-time trickle output
- One trickle / fast charge / discharge output
- Timed discharge
- Automatic trickle charge after discharge
- Automatic trickle charge after fast charge
- Strong vinyl-clad aluminum case
- Indicator light for power input
- One indicator light for each power output
- Six to ten cell charging capacity
- Accepts either 110VAC or 12VDC power output
- Voltmeter lead connection jacks
- Fuse protected output for protection from polarity reversing and shorting
- Limited 5-Year warranty
- All major components are U.S.A. made

#### 10155 ProCharge model 1020

\*DC Charging of 10 cells requires the battery to be under charge condition

# ROCK BUSTER



The Original Rockbuster is a 1/10 scale electric off-road car which comes with a RS-380 motor. It has a 3 step forward/3 step reverse mechanical speed controller, rear differential, and soft rubber tires. It comes in kit and 95% preassembled form. 2 ch. radio and 7.2V hump pack required - not included.

#### Original Rockbuster 21331 - Kit • 21343 - 95% Assm.

The Hopped-Up Rockbuster is designed for competition. It has all the features of the Original, plus a heavy-duty rear suspension, adjustable oil-filled shocks, front torsion bar, RS-540 motor, and larger low-profile tires on gold colored rims.

Hopped-Up Rockbuster 21772 - Kit • 21719 - 95% Assm.

For information on these or other fine modeling products, please contact





(Continued from page 10)



#### **Car Action Office Building**

I'm currently stationed at Camp Humphreys, Korea. I got a chance to go on a religious retreat in Seoul and thought it would be the perfect time to get a shot of DLI63, the tallest building in Asia. So I took along the current issue of *Car Action*, which, at the time, was February '89

I've read probably every R/C magazine on the market and, as the owner of six R/C cars, eight radios and countless extras, I believe without a doubt, that *Car Action* is the best R/C magazine available today. Thank you for the time put into this great magazine.

CHARLES D. AGAI Camp Humphreys, Korea

Charles, I thought this was a picture of our new office in the East; oh, well. Thanks for bringing us this interesting landmark in Korea. By the way, Charles, we need your address so we can send you some Car Action decals. We couldn't find your address.

CC

#### Flat-Pack Road Racing

I've been reading your fine mag for about a year now. I've even bought back issues.

I must say it just keeps getting better! Your how-to articles and product features have been invaluable to me and to many others; for that, thanks!

I'm looking for a good on-road car (something a bit above an MRP or a BoLINK Invader) that will accept (or can be adapted to) a 7.2V stick battery. Any suggestions? Thanks. Keep it up!

> DAN VEGSO Denville, NJ

Dan, try the McAllister Outlaw, the C&M Cobra or the Hyper 10.

CC

#### Go For The 10

I've just recently bought a used (in excellent condition) RC10. The person who sold it to me was getting into helicopters and he needed some cash. He also happened to have an extremely abused Frog that he threw in for free. The only good things on it are the motor and the rear shocks, and I figured that I'd strip those and use them for something else.

The guy threw all the parts for the cars in a box and gave them to me. In the box was an Associated-type resistor speed control, and my dad had two extra servos, so I've decided to fix up the Frog by turning it into an on-roader. Are there any kits I could buy for doing this or are there any do-it-yourself methods?

This mag's the best. Thank you for all your helpful articles on the RC10.

JOHN LOMMEL Dexter, MI

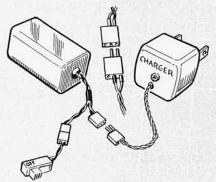
John, I don't know of any kits to convert the Frog for on-road use. If all you have of any value are rear shocks and a motor, I wouldn't bother with the Frog. It was a good car for its time, but has since been discontinued. Concentrate on the RC10; it's a great car.

WD

We welcome your comments and suggestions. Letters should be addressed to "Letters," Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. Letters may be edited for clarity and brevity. We regret that, due to the tremendous number of letters we receive, we cannot respond to every one.



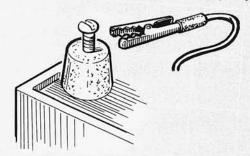
by JIM NEWMAN



#### CONVENIENT PUMPKIN CHARGING

To recharge the truck's four "AA" Ni-Cd batteries, they must be unplugged and removed, and this accelerates wear on the plugs, leads, etc. To avoid this, splice an extra female connector into the battery leads, making it long enough to protrude through the side of the enclosed chassis to facilitate charging. If you remove a side pin from a three-pin plug and socket, you'll never plug in the wrong way round.

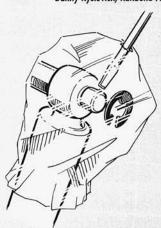
Rand W. Patterson, Portage, MI



#### BATTERY-POST ADAPTER

Small alligator clips won't fit on the posts of an auto battery, so drill a small hole about  $^3/8$  inch deep in the top of the lead posts, then drive in a brass screw onto which the clips will fit. I recommend that you keep the screw and posts coated with petroleum jelly to avoid corrosion (don't use car grease), as this won't affect conductivity.

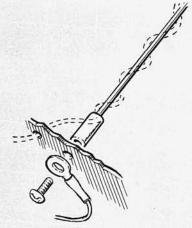
Danny Kysievick, Kakbeka Falls, Ontario, Canada



#### **CAPTURING E-CLIPS**

If you aren't careful when you pry off those E-clips, they usually fly across the room. To prevent this, just slip a bag over the component, then poke a screwdriver through the plastic to pry off the clip.

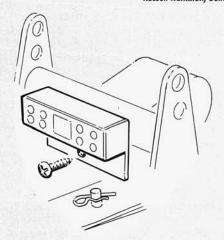
Brian Low, Scarborough, Ontario, Canada



#### **FOX ANTENNA MODIFICATION**

After rolling his Fox several times, this reader noticed that the insulation on his antenna was becoming scratched and unsightly. He put the wire below the body shell, soldered a lug to it, then clamped it to the screw under the rod base, thus making the wire rod the antenna. Be sure to range-check the radio with the motor running to see that you still have an adequate radio range.

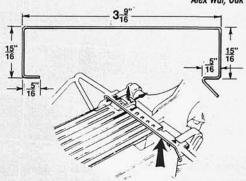
Russell Hamilton, Bellevue, WA



#### **FALCON RESISTOR DAMAGE**

To protect his Falcon's resistor, this reader mounted it between the shock towers in place of the receiver batteries, because with BEC, the batteries aren't necessary. Alex also recommends that you remove the windshield to cool the resistor more effectively.

Alex Wai, Oak Park, IL

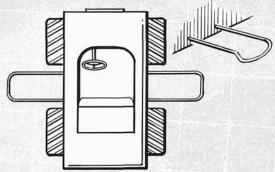


#### HORNET BATTERY CLIP

In use for over a year and 100-percent reliable, this clip is made of .040-inch-diameter music wire. Install it across the battery cover, hooking the ends under each rear-axle mount.

George Wilson, E. Burnacres, DE

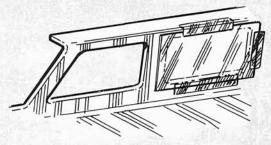




#### WILD WILLY OUTRIGGERS

A high center of gravity and a short wheelbase promote rollovers on corners. To avoid this, make these outriggers from coat-hanger wire and put them through small holes drilled in the sides of the chassis. Having used a similar idea when riding a motorcycle on snow, I recommend that you bend the loops down about 45 degrees to form skis, to reduce the chance of hooking into rocks and holes.

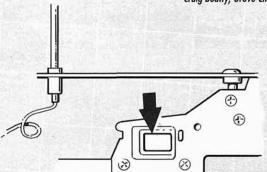
Karl & Kristoff Knutsen, Potomac, MD



#### **DIRT-FREE ULTIMA**

The lightening holes in the side of the Ultima chassis allow it to fill with dirt, so prevent this by taping pieces of thin plastic over the holes. You might also try cutting one long strip of plastic and attaching it with a smear of silicone sealant.

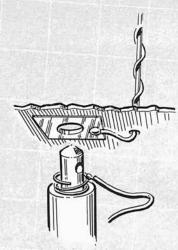
Craig Beatty, Grove City, PA



#### OPTIMA PUSH SWITCH

Isaac says that by discarding the regular switch and replacing it with a suitable Radio Shack push-button switch that's installed where the resistor was originally mounted (arrowed), it's much easier to turn the car on and off. He relocated the resistor, but, unfortunately, didn't tell us where!

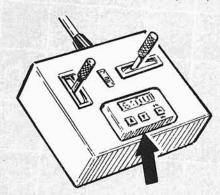
Isaac Burns, Riverside, IA



#### **AUTOMATIC ANTENNA CONNECTOR**

Used on the Blackfoot, but suitable for other cars, this eliminates the need to disconnect the wire when removing the bodywork. A coil or two of a light spring slips over a body post, and a small square of brass or copper shim is glued under the body plastic. Cut the antenna wire, soldering the ends to the spring, and shim as shown. Putting the body shell into position automatically connects the antenna. Simple, but ingenious!

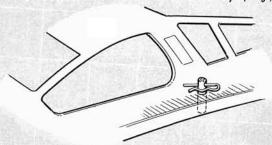
Mike Robert, Ottawa, Ontario, Canada



#### **ELECTRONIC FUEL GAUGE**

Attach an inexpensive countdown timer (available from K-Mart and similar stores) to the front of your transmitter (see arrow) with double-sided tape. Now determine how long your car will run on one charge, then set your timer about 1 minute less. With this little device, you'll be able to drive into the pits instead of being stuck on the far side of the track "out of gas." This works will with R/C planes, too.

Mike Myers, Fargo, ND



#### QUICK-RELEASE BODY

Some cars don't have body clips, and undoing screws is tedious and wears the screw holes to the point where they'll no longer hold the screws. Cut short pieces of 1/8 inch dowel, then twist them into the screw holes, mount the body shell, mark the dowels, then cross-drill to accept regular body clips.

Ryan Carden, Grand Forks, ND

Radio Control Car Action will give a free one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Pit Tips." Send rough sketch to Jim Newman, c/o Radio Control Car Action, 251 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.





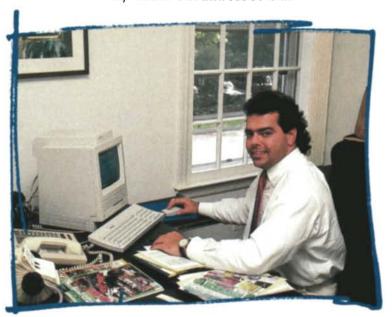


FOR THE R/C AIRPLANE ENTHUSIAST

ON NEWSTANDS AND IN HOBBY SHOPS EVERYWHERE



by LOUIS DeFRANCESCO JR.

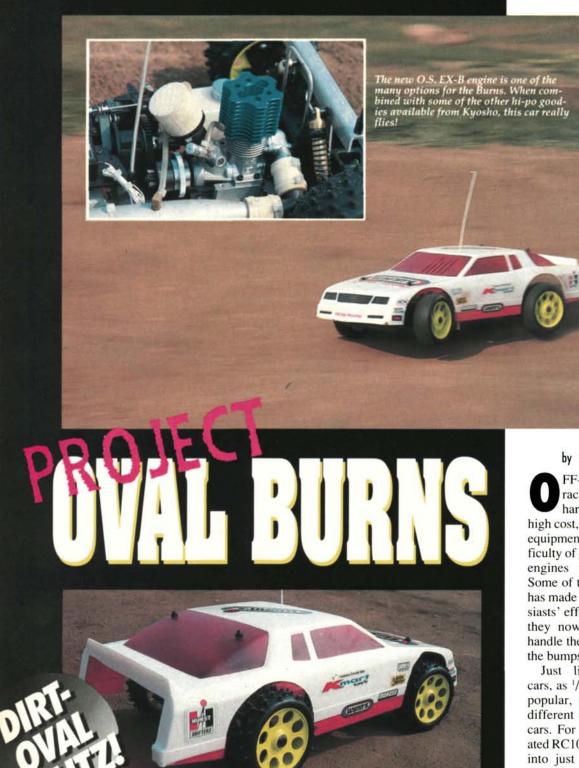


EADER PARTICIPATION is very important to us, and we invite it on many levels, the most notable being our "Readers' Rides" section that we started last winter. I can only tell you that we're impressed with the resourcefulness and ingenuity displayed by modelers. As a matter of fact, in many instances, we've been blown away! We love to see what your latest projects are.

A few weeks ago, Chris Chianelli approached me with another modeler's exercise in ingenuity. This fellow had adapted (of all things) a Tonka Truck cement-truck body to a 4WD Tamiya Clod Buster. This opens up a whole new world of scale realism and possibilities to modelers. He even has plans to motorize the drum and to add sounds and lights. By the way, his name is Jon K. Peters and he's from Escondido, CA.

I mentioned a few issues back that the hobby is going through an evolution: It's maturing, and speed, power and scale realism seem to be more what the modeler is pursuing, and whether it be a <sup>1</sup>/4-scale sprinter, a 50mph <sup>1</sup>/10-scale stocker racing on a high-banked oval, or a home-grown conversion like Jon's Cement Truck, they're indicative of this rapid change.

Our special Monster Truck issue is going ballistic, and, by the time you read this, our 1990 Buyer's Guide will just be a few weeks away. We've started on another newsstand publication for you; it's our first annual On-Road special, but more on that later. Good luck with your modeling efforts!



#### by STEVE POND

FF-ROAD <sup>1</sup>/8-scale gas racing has taken some hard knocks owing to its high cost, the amount of support equipment required, and the difficulty of getting the micro/nitro engines to run consistently. Some of the newest technology has made <sup>1</sup>/8-scale racing enthusiasts' efforts more fruitful, and they now have cars that can handle the horsepower and take the bumps.

Just like electric-powered cars, as ½ scale becomes more popular, enthusiasts will find different applications for their cars. For example, the Associated RC10 has been transformed into just about every type of vehicle you can imagine; from monster trucks to Indy cars—it has seen it all. One-eighth-scale

# BURNING UP THE OVAL

gas cars are now experiencing this type of evolution, though to a lesser degree, and if the 1/10-scale boom is any indication of things to come, watch out!

Reports from the Midwest indicate that a number of racers have exercised their creativity by converting their off-road 1/8scale nitro-burners into dirt-oval machines. Having done a Track Report on the Kyosho\* Burns in the June '88 issue of Car Action, I knew it would be a good candidate for this type of conversion, but you could use just about any 1/8-scale offroader, and the necessary full-fender bodies are already available from 1/8-scale onroad racing cars.

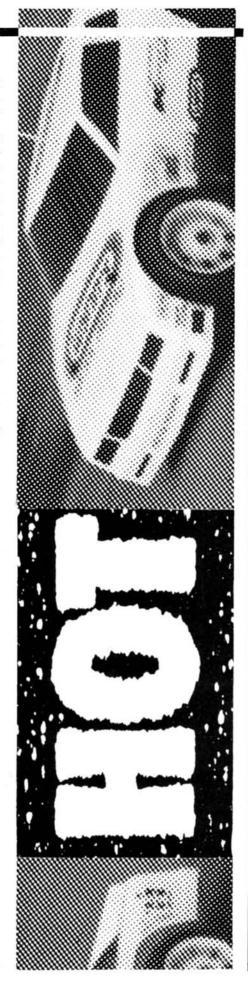
As an off-roader, the Burns has been very successful in Europe, and it's gaining popularity here in the States. Its features include the standard 4W independent suspension with 4W shaft drive. It has three differentials: a bevel-gear differential at the front and the wheels, and a center differential attached to the spur gear. For my conversion, I attached some of Kyosho's optional performance accessories. I installed the new O.S.\* EX-B .21 racing engine and the tuned piped, which offers a considerable performance increase over the stock exhaust.

To install the EX-B in a Burns that's equipped with the O.S. VF-B, a new flywheel must also be used. The stock needle bearing in the clutch bell (which causes wear on the pilot shaft over time) was replaced by Kyosho's ball bearing, which allows much smoother operation. I chose the 12-tooth clutch bell, which is one tooth smaller than stock for stronger acceleration on short tracks.

While there's no oval conversion available for the Burns, you can take a few basic steps toward allowing the Burns to handle a high-speed power slide. For starters, I lowered the suspension by putting sections of fuel tubing onto each of the shocks. The amount you lower the suspension must be determined by your track's surface. If, like the track I run on, your track is a little rough, you shouldn't bring the car down too low, or it will scrape the ground. On a smooth track, you have a little more flexibility.

To mount the full-fendered MRP\* Monte Carlo stock-car body for the oval look, I had to make new, wider body mounts. To make these, I simply bent two strips of 3/32-inch aluminum 90 degrees, bolted them to the shock mounts, and attached some Du-Bro\* body-mounting

(Continued on page 98)



# MANUFACTURER INDUSTRIAL ENGINEER

Parma International, a major manufacturer of slot cars, radio-controlled cars, boats and airplanes, seeks an experienced Industrial Engineer. We require a degree with 3-5 years experience in a fastpaced manufacturing environment. The successful candidate will have a high mechanical aptitude with capability of making tools, jigs and fixtures. If you have R/C and slot car experience, we would like to hear from you. Send résumé and salary requirements to:

13927 Progress Parkway North Royalton, OH 44133



# R.C. MAGIC INC.

REMOTE CONTROL HOBBY CENTER 37 ORCHARD ST. MANHATTAN, 10002 N.Y.

1-(212)-431-9035

WE SPECIALIZE IN CARS, **ACCESSORIES, REPAIRS** AND MODIFICATIONS.

MONTHLY SPECIALS

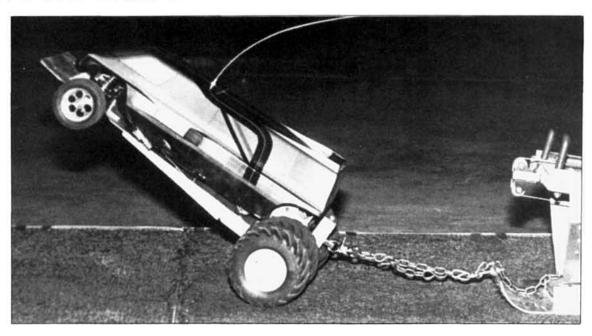
WE SHIP TO ALL 50 STATES PLUS P.R.

MAIL ORDER ADD **POSTAGE & HANDLING** CALL OR VISIT



by DAVE SPROUL

# **HEAVY HOOKUPS**



N THE PREVIOUS "Truck Stop," I promised that this time we'd take a look at some R/C pullers. Well, here we are! R/C pulling is an up-and-coming sport, and the vehicles being used are as varied as their owners. While some sports tend to attract certain age groups, R/C pulling is popular with everyone, partly because it requires less driving skill than racing. Full-scale pulling events also help to make R/C pulling popular. Most of the skill involved in R/C pulling is in the vehicle set-up, and a lot of modelers have as much fun building, detailing and tinkering with their vehicles as they do driving them.

Any R/C buggy or truck will work for pulling if it's set up properly. First, you must determine the class in which you want to compete, and usually the type of vehicle you have will dictate your class. To find out class rules, consult the rulebook of the sanctioning body where you intend to pull. If you intend to buy a new vehicle to pull with, I'd recommend buying one of the truck kits available from the major manufacturers. Truck kits are generally stronger and more readily adaptable to pulling. Once you've selected the

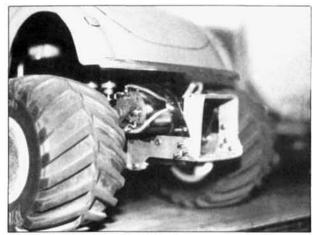
kit and determined the rule limitations for your class, proceed with setting up the chassis for pulling. If rules permit, move your battery pack to the front bumper and add weight up to the class maximum. You'll usually need most of the weight on the front of the vehicle. However, this depends on track conditions, gearing, tires, etc., so you'll have to experiment.

You'll need a hitch. The only commercial hitch that I'm aware of is from Fine

Design\*, and it fits the Tamiya\* Blackfoot and Monster Beetle (part No. FD9056). If you own a different truck, you'll have to make your own hitch from scratch by using metal that firmly attaches to the chassis. Again, consult the rules, and incorporate a hole (at least 1/4-inch) for sled hook-up.

The front suspension can usually be left stock. Rear suspension should be locked to help improve traction. Remove the rear shocks and replace them with solid struts. Check the rules for your class to see if this is legal. The stock truck tires work well for most surfaces and conditions; however, almost all tires should be stuffed with foam to prevent tread "buckling."

As you can see, very little modification is necessary for stock kit vehicles. If you want to build your puller from the ground up, the possibilities are endless (within the rules, of course!). Check the rules at your



Scratch-built hitch for this Big Brute was made out of heavy aluminum sheet stock.

#### TRUCK STOP

local pulling track for the open or experimental class and then build your dream puller!

Of course, you can modify a production-kit vehicle to fit into a modified class with the addition of battery packs, pulling motors, smaller pinion gears, more weight, etc. Pulling motors are available from Black Magic\* (No. 7001), Astro Flight\* (Turbo 05 Pulling) and Trinity\* (Monster Mash). Gear-reduction transmissions are available from Black Magic, Stormer Racing\* and BoLINK\*. Special tires are made by Imex Model Co.\* (No. 7590) and Pro Line\* (No. 1041).

Fuel-powered pulling exists, although there isn't much interest yet. Virtually any gas puller would have to be scratch-built, because there are very few fuel-powered kits available. Interest is gaining, however, and the National Radio Control Truck Pulling Association\* is working on fuel rules for 1990 that cover 1/10 through 1/4 scales. Design 1 Motorsports has a 1/4scale 4WD pulling truck and a 1/4-scale sled available.

Recently, I visited Ray Olmi of Terre Haute, IN, and I watched his scratch-built 1/4-scale funny-car puller in action. He even let me drive, and it's one awesome machine! Watch for an article on this in the future. I hope the interest in fuel continues to grow, especially in 1/4-scale. Can you imagine a 1/4-scale tractor with six 50cc nitro-burning chainsaw engines?! Even a 1/10-scale tractor with six .12 to .21 glow engines would be impressive! Whatever your interest, R/C pulling can mean only one thing-fun!-especially if you like detail. Most pullers like to trick-out

their pullers to suit their own tastes. Use your imagination and let's pull!

Until next time: Keep on truckin'.

\*Here are the addresses that are pertinent to this article:

Fine Design & Manufacturing, 2 North St., Middletown, NY 10940.

MRC/Tamiya, 200 Carter Dr., P.O. Box 267, Edison, NJ 08818.

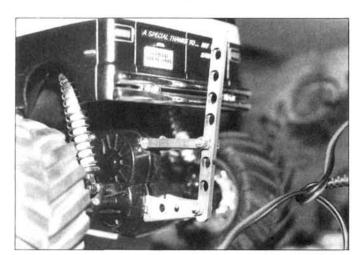
Black Magic; distributed by R/C Research Engineering, 604 South Grand Ave., Fowlerville, MI 48836. Astro Flight Inc., 13311 Beach Ave., Marina Del Rey, CA 90292

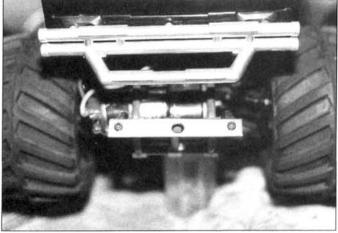
Trinity, 1901 E. Linden Ave., Linden, NJ 07036. Stormer Hobbies, 31 Garden Terr., Glasgow, MT

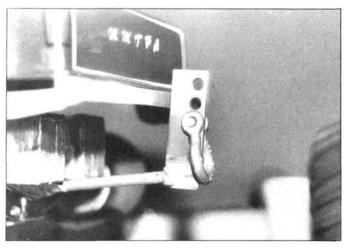
BoLINK R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245

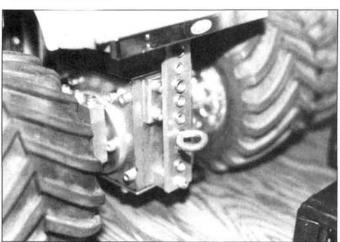
Imex Model Co., 663 Townline Rd., Hauppauge, NY

Pro-Line USA, P.O. Box 456, Beaumont, CA 92223. National Radio Control Truck Pullers Association, P.O. Box 1488, Champaign, IL 6128-1488.

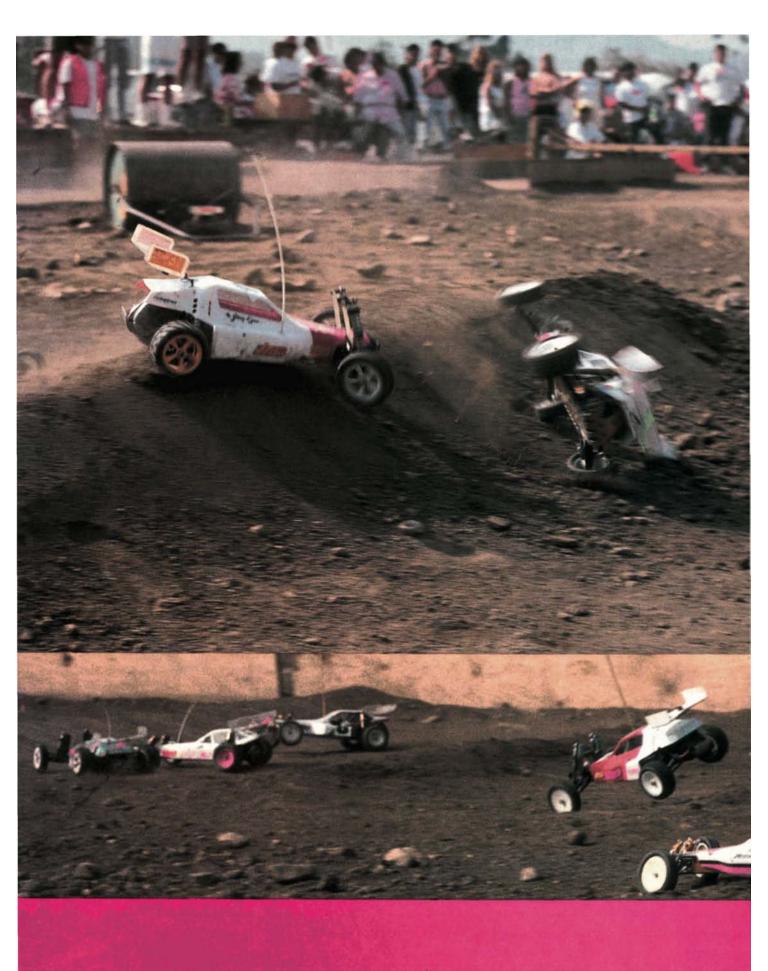








Here are a variety of methods truck-pull enthusiasts have come up with to hitch their trucks to the sleds. It's best to build your hitch out of metal and design it to so there is some means of adjusting the height of the hitch.

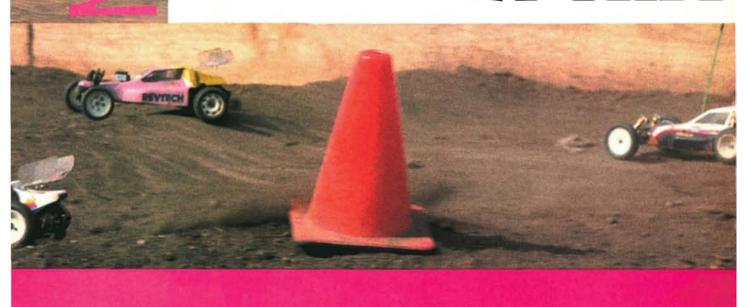




#### by RICK HOULE

ASADENA, CA: If the screams of 43,294 excited race fans mingled with the throaty roar of nitro-burning off-road machinery isn't enough to get your juices flowing, then you must be brain-dead. This scene was the backdrop for the 200 R/C racers competing for points and trophies in a scaled-down version of the "Chunk of Baja" that took place in the Rose Bowl Stadium. The Revtech-sponsored, NORRCA-sanctioned event took place in the stadium's parking lot and featured nine classes, including the newly sanctioned 4WD Open Monster Truck Class, and

# SOFF-ROAD PRIX

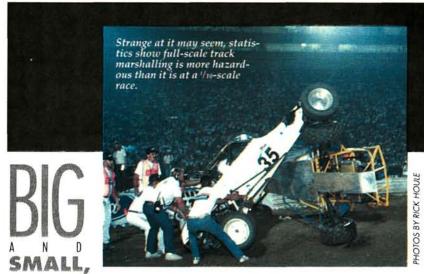


this ensured that everyone could compete.

2WD Open: Team Losi's Jack Johnson was the sole driver in the 2WD classes to complete 14 laps during qualifying (14/4:14.6)! Teammate "Rocket" Ron Rossetti earned a front-row start with Johnson in the A-Main event, but luck wasn't with the Losi drivers in their final race. Rossetti grabbed the holeshot and led the A-Main race almost to the wire. With only 20 seconds left in the race, however, Rossetti ran into trouble as Jon Anderson (who had been trailing Rossetti) took over the lead! A&L's Chris Allec, having moved up from the 6th starting position, was now in the runner-up spot. At the wire, it was Anderson in 1st place, followed by Allec in 2nd, with Peak Performance's Eric Beier in 3rd.

Open Monster Truck: Jack Johnson again set the pace for everyone to follow by posting the TQ time of 13/4:16. It was a case of déjà vu, as Rossetti again found himself next to his buddy on the front row of the A-Main starting grid. Johnson shot off the line at the start and held on for dear life! Rossetti trailed in 2nd for a while until Twister and JG driver Brandy Dreifus (having moved up from the 8th starting position) sneaked past him for the runner-up spot.

Eustace Moore, of MIP, briefly found himself among the leaders before getting edged out. On the final lap, Brandy began putting her Twister horsepower to work by reeling in Johnson. Rounding the last turn before the finish line, Brandy stole the lead, but Johnson cut in front of her. Clearing the final jump, Brandy leap-frogged Johnson at full speed and both cars tangled! When the dust had settled, the computerized automatic scoring system declared Johnson the winner, with Brandy in 2nd and Race



## **DESIGNED TO HAUL**

by CHRIS CHIANELLI

HE SIMILARITIES between the Super 1600s and Super Lights that compete in Mickey Thompson Stadium races and 1/10-scale off-roaders are so striking that one might wonder which came first: full-scale or R/C? OK, we know the answer, but these aggressively treaded, caged and shock-towered dirt terrors not only look like their little cousins, but also act very much the same. Here are some quotes from well-known

Mickey Thompson Stadium drivers that may sound strangely familiar to you off-roaders:

 From Lloyd Castle, Ultrastock heat-race winner in the General Tire Nissan Pulsar: "It's a very hard track for Ultrastock suspensions. Going from jump to jump, you never relax. I hope we do as well in the main event."

 From Ivan "Ironman" Stewart, Team Toyota: "This course is a tight one, but it works for our

> trucks. We're getting good traction from our combination Yokohama Super Diggers and Mud Diagers. This is good dirt for these tires: It's loose, and I expect it to stay that way."

- Danny Thompson, Peak Chevrolet: "I managed to get a good jump on the field."
- Walker Evans, Stroh Jeep: "I had a couple of tie-ups that held me back, but the power's right there. It's just a matter of positioning, which we're planning to handle during the main event."
- Glenn Harris, General Tire: "After such a disappointing showing in the first heat race, we're making some front shock changes."

You may not be running Yokohamas, and I'm sure Glenn Harris isn't changing the front shock oil in his Kyosho Golds, but every one of these full-scale racer's remarks would have been just as appropriate at your local 1/10-scale off-road race. Like them, you're after one thing: getting a good position in the A-Main start!



With its shock towers, aggressive treads and roll cage, this 360cc Super Lite possesses a striking family resemblance to the 1/10-scale off-roader.



Whether full- or 1/10-scale, monster trucks are inevitably drawn to the same arenas as the off-road dirt machines.

Tem Raskin (#8) does the rolling act with another racer, while a third cunning fellow takes advantage of the situation.

Prep's Tem Raskin in 3rd. 4WD Open: Fourteenyear-old Nichelle Rivera always looks out of place on the drivers' stand next to the older hot-shoes. With Peak Performance power, she set the pace in 4WD Open with a TQ run of 14/4:17! At the start of the A-Main. Nichelle took the holeshot and led for most of the race, with

Team Associated's Rick

Vehlow chewing on her tail pipes! The two leaders went door-to-door to the wire, and at the finish line, it was Vehlow in 1st, Rivera 2nd and Team A&L's Dominic Sellers in 3rd.

Super Stock Truck: Dave Miller was the undisputed fast guy in this class by posting the TQ time of 12/ 4:00. Miller led the pace for most of the A-Main, but not without a healthy challenge from Jeremy Kortz. Miller made it across the finish line in the leaders and even had the point position for a while, but Paul Williams (driving his son's truck) steadily moved up. Williams took the win with Warnke in 2nd and Vo in 3rd.

4WD Stock: A&L's Dominic Sellers posted the sole 14-lap run in the class during qualifying (14/4:14), and he kept the coals stoked into the main event. Blasting off the starting line, Sellers got the holeshot but lost to John Keck as Rick Watchorn moved never looked back! He took the win with Mark Magee in 2nd and John Gibbs in 3rd.

2WD Stock: Peak Performancepowered Eric Beier posted the TO time of 13/4:08 with Twister-powered Chris Allec hot on his trail! Beier maintained the lead for the first half of the A-Main race but then lost it to Allec. Beier managed to take the lead when Jon Anderson tangled with Allec, taking both Allec and himself out! The leaders freight-trained around the track in these positions for the rest of the race with Beier taking the win followed by Allec in 2nd and Anderson in 3rd.

4WD Open Monster Truck: NORRCA's experimental new class saw only three entrants, but that didn't seem to dampen the enthusiasm of the drivers. They finished the final race of the day in the positions in which they had qualified: Tom Cox, 1st; Ron Gevis, 2nd; and John Gudvangen Jr. in 3rd.

With the R/C races completed, there was plenty of time left to go inside the Rose Bowl to catch the final heats of the "big guys," and the R/C racers who took advantage of the discounted tickets watched their favorite counterparts ripping up the larger, yet familiar-looking, racecourse.



Concours winners: (left to right) Phil Costa, 1st; Rick Houle, 2nd; and Steve Espinoza, 3rd.

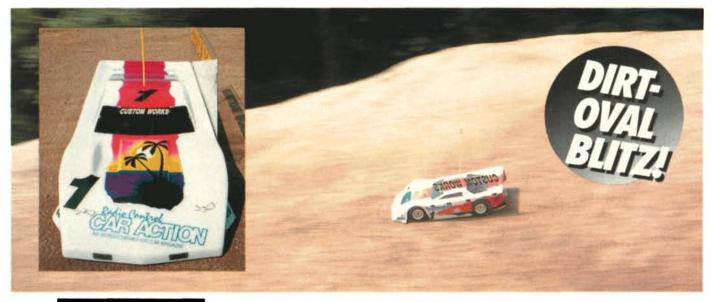
lead, a full lap on the field, with Kortz in 2nd and Dominic Sellers in 3rd.

Stock Truck: In the class that started it all for Monster Trucks, Rick Dunlap posted the TQ time of 9/4:02, but he was struck with the insidious "TQ Curse" in the main event. Hai Vo rounded turn one in the lead at the start, with Gary Grijival in tow. Duane Warnke moved in among the

into 3rd. Sellers hung back in the runner-up spot until Keck made a mistake! At the wire, Sellers took the win, a lap on the field, with Keck in 2nd and Eddie McKay in 3rd.

Novice: Sean Cox was the class TO with his run of 12/4:17. Ignoring the fact that his antenna was dragging on the ground behind his car in the Main, Cox took an early lead and





TRACK REPORT

by WALLY DAVID

THE NAME SAYS IT ALL



FIRST SAW saw a Custom Works\*
Dominator in July, 1987, at the
Revtech Oval, at RCRC in Gardena,
CA. I had timed my vacation in California to coincide with this event and
was entered in the Street Stock Class
with my nearly new, bone stock, RC10.
My experience had consisted solely of
carpet racing with a little asphalt racing mixed in, and during practice, I
didn't have time to watch the other cars.
I knew there would be 4WD cars racing, but that didn't really excite me,
because I usually turned more laps than
they did anyway.

Back East, the only 4WD cars we had heard of were the Hot Shot or the seldom-seen Optima, so I wasn't pre-

pared for the shock of seeing this wedgebodied missile whipping around the track. After I'd spit the dirt out of my mouth (the dirt that was blown in by the passing race car while my jaw hung open in amazement), I managed to gasp, "What was that?" The response from some amused onlookers was, "The Dominator!"

Well, that was over two years ago, and the Dominator has spread across the country, all the way to the East Coast. You might be wondering how a car that was so amazing when

#### **CUSTOM WORKS**

#### **DOMINATOR**

Туре	4WD dirt-oval racer
Scale	
Sug. Retail Price	\$579
DIMENSIONS:	
Overall Length	18 inches
Width	9.5 inches
	4.5 inches
Wheelbase	11 inches
	7.63 inches
	7.75 inches
WEIGHT:	
	58 ounces
BODY:	
Type	Open Comp Camaro
	Lexan
CHASSIS:	

#### **DRIVE TRAIN:**

Primary	Pinion/spur
Transmission	Chain drive
Differential	None
Bearings	Ball bearings

Type ......Flat pan with upper plate

Material ......Graphite

#### SUSPENSION:

Type (t/r)	Iwin A-arm
Dampening (f/r)	Aluminum oil-filled,
	coil-over shocks

#### WHEELS:

Type (f/r)		One-	piece ny	/lon
Dimension	ns (DxW) (f/r)	1.63	x1.5 inc	hes

#### TIRES:

Front/Rear	One-direction Oval-Pro
	rubber spikes

#### **ELECTRICS:**

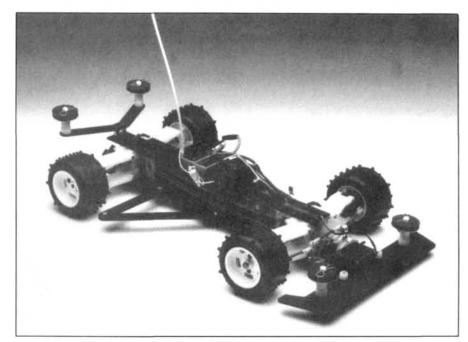
Motor	05/540 (not included)
Battery	6- or 7-cell stick pack (not
	included)
Speed Controller	Electronic (not
	included)

#### **OPTIONS AS TESTED:**

Futaba Magnum Jr. FP2PKA with R102JE receiver and S132H servo; Novak NESC T-1X electronic speed control; Dymond Gold Series modified motor; Kimbrough 48-pitch gears.

#### **COMMENTS:**

Although aimed at the very experienced racer, assembly is enjoyable because of packaging of the parts and hardware and the concise instructions. It handles extremely well, with lightning acceleration out of the corners. It would be nice if the pictures could be incorporated into the instruction manual. A legend of the full-size drawings of the hinge pins would be of great help. Custom Works has made an already incredible car even better.



The completed Custom Works Dominator. Notice the graphite rear body mount and nerf wing. The drive chain runs between the front and rear drive sprockets.

first reviewed in Car Action (Dec., 1987) could have been improved enough to warrant another review. While the Dominator was a truly impressive car, Jerry and Brian Landgraff, its creators, haven't rested on their laurels. They have continued to improve it, and it's one that really will dominate the competition.

THE KIT: The Dominator I reviewed was the No. 0901 Graphite Complete. It features the new oval chassis, which has seven battery slots on the left side. The original version of the car had an additional four slots on the right side for road racing, but since the Dominator's true calling is as an oval car, it doesn't have to turn right. By getting rid of the right side of the chassis, they've made it 2 inches narrower and nearly 1 ounce lighter. The main chassis, upper plate, rear body mount and nerf bar are all made of highstrength graphite.

The suspension is fully independent, front and rear, with twin upper and lower A-arms. These A-arms are probably the most improved part of the car. The original A-arms, along with the drive-shaft carriers and rear-axle carriers, were made of a glass-filled nylon, which was on the brittle side. The new components are molded out of a solid nylon, which is extremely stiff and nearly impossible to break.

The front hubs now feature double oneway bearings, and this gives pulling power while the throttle is on, but allows the front wheels to free-wheel when the throttle is released, causing practically no drag-induced power loss. Single'one-ways were used on the first version, and they were ahead of their time, but they weren't as effective as the current setup.

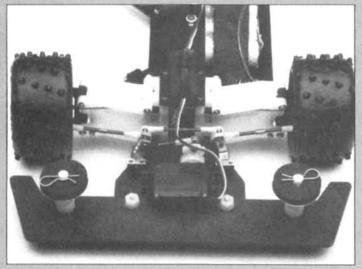
The Dominator uses an ultra-efficient chain-drive system with ball bearings everywhere they're needed, and it's beyond comparison. There's no differential in the system. A short chain runs from the rear drive sprocket to the reduction shaft, with a longer chain running from the reduction shaft to the front drive sprocket. A spur gear is connected to the reduction shaft, which transfers the power from the mid-mounted motor. Speaking of the motor, it's mounted on the left side of the car, which is where you want the weight on an oval car.

In general, most improvements were made to lighten the car while maintaining its strength. As an example, the kingpins, which look similar to those found on the Optima, are now made with a hole through the center to save weight without weakening them. Other elements that have been lightened and/or strengthened include the drive sprocket, the front and rear hubs and the outdrives.

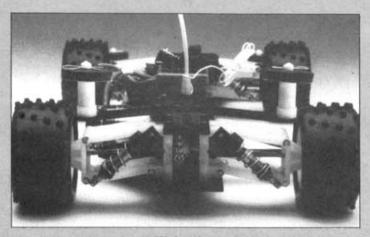
Also included in the Graphite Complete kit are: an Open Comp Camaro body with a new hood scoop and molding lines; a full set of turnbuckles; wheels that now come in a white nylon that's both lighter and stronger than the old wheels; Custom Works' own "Oval-Pro" tires with one-direction spikes designed for ovals; and a handy set of Bondhus ball drivers.

The Dominator is also offered in three other versions: No. 0902 Graphite Basic; No. 0903 Fiberglass Complete; and No.

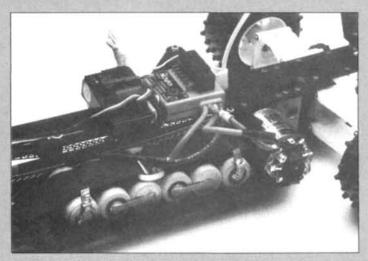
### DOMINATOR



The steering servo is located at the front of the car. A drag link system controls the steering, which includes turnbuckles. The Oval-Pro tires have a one-way spike pattern, designed specifically for oval racing.



This rear view shows the oil-filled, coil-over shocks made by Delta. The drive sprocket in the center of the car transfers the power to the wheels.



A handy Velcro battery-strap system keeps the batteries in the car. The Novak NESC T-1X electronic speed control is wired to a Dymond Gold Series motor. Electrics are mounted on the upper chassis plate to keep them out of the chain's way.

0904 Fiberglass Basic. The Fiberglass Complete includes all fiberglass chassis pieces, while the basic kits don't include a body, wheels, tires, turnbuckles or balldriver set.

CONSTRUCTION: Building the Dominator is a very enjoyable experience, because the packaging of the parts and hardware was so well-coordinated. Only those things that were needed in each step were contained in the appropriately labeled bags, and this greatly reduced the chance of losing something.

The instructions were concise and accompanied by a separate booklet containing photographs. Each photo had a number that was referred to in the instructions. I think it would have been easier for builders if the photos had been worked into the instruction booklet to avoid having to "shuffle" between two places. This is a small point, however, as the quality of the photos and instructions made up for the inconvenience.

Even though the Dominator is aimed at the very advanced racer, its simple, clean design makes assembly straightforward. Building starts with the assembly of the main part of the chassis, the nerf wing, front bumper/body mount, upper chassis plate, and rear body mount. It continues with the front and rear axle carriers and associated pieces.

You must pay particular attention to the left and right front hubs. They must be kept separate, because they contain the one-way bearings. When installed on the correct sides, they should free-wheel when spun forward and catch when you try to turn them backward. (It's a good idea to mark "left" and "right" on the hub so you can tell the difference.)

At this point, you take a break from the Dominator instructions and follow the sheet included with the Delta\* oil-filled, coil-over shock absorbers. Truthfully, the assembly of these shocks is the worst experience I've ever had in the R/C hobby! These little devils take a lot of playing with to get full travel, and I'm not quite sure how I eventually got them to work. I just kept bleeding and refilling the shocks until I had the right "feel." Once I did get it right, however, the shocks were very smooth. Jerry Landgraff told me that these shocks are the best on the market, and Custom Works wouldn't be able to make better ones and still be costeffective. If I ever find a quick trick to building them, I'll pass it along. The Dominator instructions encourage you to call Custom Works if you have any questions.

Next comes the assembly of the front and rear bulkheads and the installation of the drive-train system, followed by the suspension arms. My only problem was keeping the hinge pins straight-not that they're bent, but you really have to be sure to use pins of the correct length where specified. The instructions give you the lengths as needed, but the differences are very slight, and this makes the process difficult. A legend with full-size drawings with which to match the pins, would have been a big help to me.

After this, assembly continues without a hitch. Mounting the radio equipment is easy, as the speed control and receiver are attached to the upper chassis plate. The steering servo is mounted in front of the front suspension arms and is connected to an interest-

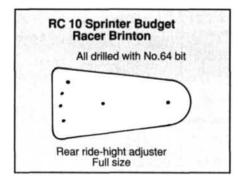
(Continued on page 98)

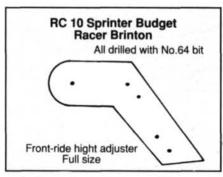
# BUDGE

by DICK BRINTON

HAT'S THIS? RC10 and Budget Racer together in the same article?! The combination isn't as strange as it sounds. In the past, Budget Racer articles have dealt with entry-level cars and, as a matter of fact, this month's article was to have been the start of a new Heavy Metal Budget Racer series. However, some of the necessary parts failed to arrive, so the Heavy Metal articles will start next month.

In the meantime, let's take a look at a

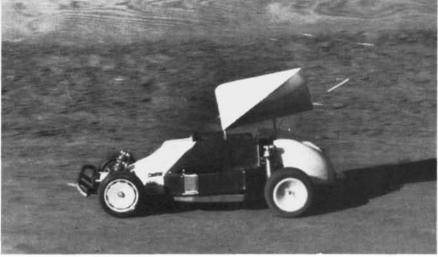




Front and rear shock tower templates.

very effective and inexpensive conversion of Associated's\* RC10 into a screaming dirt-oval burner. Please note that I said "effective and inexpensive." Sure, you can choose the fiberglass or composite chassis plates and after-market transmissions, but here's one way to go budget-racer style and get a few tuning items even

FORTY-DOLLAR OUTLAW



the high-dollar boys don't have. I guarantee that if you follow the suggestions in this article and do the set-up correctly, you'll be able to run with any of them—and you'll also have leftover cash!

Let me give you some background on this sprinter. I've been running a box stock (including wiper resistor speed controller) 5-year-old RC10 in the sprint stock class at Sacramento Mini Wheels scale 1/2-mile dirt oval. The car weighed 3 ounces over the 3<sup>3</sup>/<sub>4</sub>-pound (60-ounce) class minimum weight. In eight races, it collected one 1stplace, two 2nd-place and four 3rd-place trophies, all in A-Mains, so the car was no slouch. However, the other cars were getting faster and I wasn't, so it was time for improvements. Finally, the car developed persistent electrical problems, and I decided to "modernize" it to better compete with the increased levels of competi-

tion.

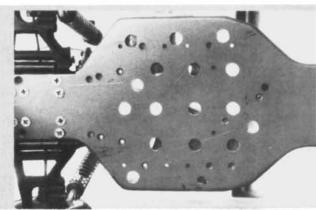
The first order of business was to get the weight down below the class minimum, so I could add weight where needed to bring it back up to the 60 ounces necessary to be class-legal. I thought about a graphite chassis for about 3 seconds before my "budget racer" mentality took over. I told myself that I had a perfectly good chassis and all it needed was a bit of weight reduction. I was right. Even cut down and drilled, the stock

RC10 chassis still provides a solid platform for the suspension.

The secrets to RC10 chassis hacking are: Don't cut the side rails down below half height; make the cuts smooth curves rather then sharp corners; don't drill lightening holes right against the chassis rails or near the front or rear tongues. That's all there is to it. By using a hacksaw, Dremel tool and cut-off wheel and a file, my car lost 2 ounces.

Next, the old electrical system had to go. Out went the wiper resistor, all the wiring and, of course, the servo necessary with a wiper speed controller. I installed a Novak\* T-4 and saved 11/2 ounces.

To save more weight, I replaced the stock front rims with Kyosho\* rims (off the Raider) and saved 1½ ounces on each side. Weight taken off the moving parts of the suspension pays off in two ways:



These holes were drilled with a <sup>3</sup>/<sub>8</sub>-inch bit, but a <sup>1</sup>/<sub>2</sub>-inch bit would be OK. Don't drill holes where the chassis narrows at the rear or near the tongue at the front, and keep them away from the side rails.

There's the overall weight reduction, and the suspension works better since there is less unsprung weight bouncing about, which makes the shocks and springs work harder and upsets the car's balance.

I changed the rear rims for low-profile rims and added Advance Engineering\* tires. While the Advance tires require a higher initial investment, they last longer and can really hook up. Total weight loss was about 1/2 ounce. If your car needs a light body, try Associated's No. 6163. Painted, mine weighs 2 ounces.

Since sprinters turn left only (most of the time), I angled the battery toward the left side, and, in the process, dispensed with one of the battery holders. By now, the car was getting so light that I figured if I kept at it long enough, it would float around my workroom. Actually, the total weight loss was a very respectable 5.5 ounces. If you already have an electronic speed controller, your only expense so far is tires and wheels.

So much for the slimming down. We now have a car that weighs right at the class minimum with 2.5 ounces of tire weights clipped and taped to the left side of the chassis. The weights can be moved forward and backward to adjust the car's balance. That's a big tuning advantage, but it's only half of what's needed to be competitive. Besides having your car weigh in right at the class minimum, the real secret to going fast on an oval track is handling the turns well! It makes no difference how much top speed your car has if it can't handle the turns well and come out of them with high speed. Cars that

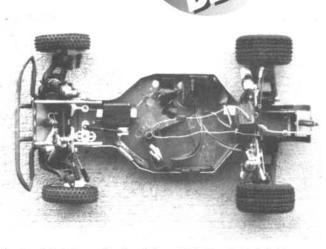
handle better with somewhat lower top speeds will eat your lunch every time.

A car with really good handling is easier to drive consistently fast. It can go deeper into the turns before getting off the throttle, hold the line better, and it will exit the turn with a much higher speed than a car that handles poorly. Once a car is handling well, straightaway speed can be

"adjusted" with the correct combination of motor, gears and battery.

Before you start making the suspension changes that follow, be sure to refer to Steve Pond's article, "RC10 Torpedo" in the July '89 issue of *Car Action*. Set up the transmission and shocks following Steve's directions. I'll describe all the changes, and, at the end of this article, I'll give you some ideas on race set ups.

Full-size sprinters have ride-height adjustments because handling improves a lot when they're adjusted correctly! I decided to put ride-height adjusters on my RC10 so I could adjust the ride height for any spring pre-load setting, and that's exactly what this system does. If you can find a sheet of <sup>3</sup>/<sub>32-inch</sub> fiberglass, you can cut out the pieces with a coping saw, or you can buy a spare

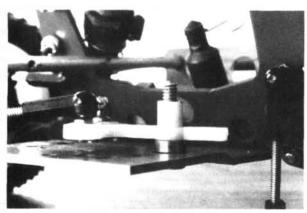


Overhead shot shows the chassis layout. Notice the Andy's A-arms on three corners, the JR-X2 connectors on the front suspension, the angled battery holder and the chassis weights. These weights are taped on before racing.

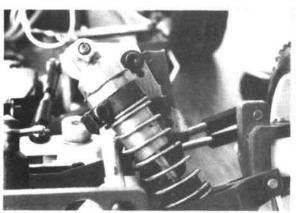
front suspension mount and cut it up as shown. I'd already swapped the stock units for a set from Hot Trick\*, so I had the stock spares to chop up.

I installed Andy's\* A-arms at the rear and at the right front, and I used the stock RC10 arm on the left front. This transfers more weight to the left front, which is the most lightly loaded tire on the car.

While I was rebuilding this car, I installed Robinson Racing's\* RC10 Trackers, which is a toe-adjusting system for the rear wheels. With the Trackers, you can dial-in whatever toe amount your car needs. Keep in mind that excess toe-in tends to add tire drag, but insufficient toe-in makes the car unstable. With the Trackers system, you



The bearing used is a 4x8mm. Use a smooth, flat washer between the steering assembly and the locking nut, which goes on upside-down.

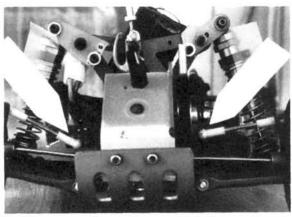


Ride-height adjusters. To change the ride height, loosen the pivot screw, remove the locking screw, and change the height so holes line up. Replace the locking screw and tighten the pivot screw. Be sure to set the approximate spring pre-load before setting the ride height.





### **BUDGET RACER**



The rear suspension pick-up points are different from side to side. After experimentation, these particular ones worked best for maintaining the maximum tire-contact patch through the turns.



These wing adjusters allow repeatable wing settings even after a crash. Brass tubes are glued inside the body, and pieces of fuel hose perform the adjustments.

can dial-in just what's needed. I adjusted the rear upper control links to help keep the rear tires flat when the chassis rolls while flying through a turn.

I wanted to keep the stock RC10 steering because it's very light, so I developed a way to get ball-bearing steering while using the stock system. I simply used a spare, unflanged bearing at the bottom of the stack, which produced a very smooth, slop-free system. The top locknuts are reversed, because some of the threaded shaft length is taken up by the bearing width, and the locknuts don't have enough thread to work right-side-up.

I replaced all the adjustable nylon rod ends with those from Team Losi's\* JR-X2, because they fit more tightly than the stock units. Steering or suspension slop is the enemy of precise driving. Having spent less than \$40 (not counting the Novak T4 or tires), I had an RCl0 sprinter that's adjustable to various tracks.

I can't give you a cookbook approach to handling; it depends on each car and on the driver's style. There are, however, some general rules that apply to all handling set-ups on smooth dirt ovals.

The lower the car, the better. Using the ride-height adjusters, lower your car as far as you can go without hitting the track on any bumps at speed. By juggling the spring pre-load and the ride height, you can set your car to the proper height and pre-load. For more traction, chassis roll can sometimes be used to load the outside tires, but, because our cars are small and twitchy and we're driving them remotely, I've found it best to run my car as low as reasonably possible; it's more predictable. Using the ride-height adjustments, you can also shift some weight to the front tires or to the back tires by adjusting the fore and aft slope of the chassis.

Tilt the chassis to the inside of the track to shift the static weight as far to the left as you can get it. Do this by setting the minimum ride height as outlined above, then raise the right side ride height 1.5cm

higher than the left.

Centrifugal force and chassis roll will transfer weight to the outside tires when in the turn. Ideally, the chassis adjustments, tilt and ride height should be such that all tires are equally loaded in the turns; this, however, is rarely accomplished. On an oval, it's especially tough to get the left front tire to do its share of the work, and this is why so many sprinters run three-legged through the turns.

On full-size race cars, tire temperatures are checked from tire to tire and across individual tires to get a measure of how hard each is working. This is difficult to measure with our cars but, on a track with a blue groove, I touch the tires to my cheek immediately after running to feel the differences in tire temperatures. (I also get a dirty face!)

The rest of the adjustments are made as you always make them. Set the camber for maximum contact patch with the chassis tilted as if your car is in the center of a

(Continued on page 108)

CT residents please add 8% sales tax

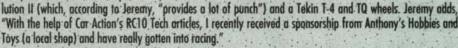
Address/Apt. #

✓ elcome to "Readers' Rides"! We continually receive photos of readers' latest projects, so we've decided to start featuring some of the more innovative stuff to give all our readers a glimpse of these neat cars and trucks, etc. So here we go! If you want to be part of this new feature, send us a nice color photo of your project with a brief description, and we'll show it to the Ayatollah of Radio Controlla at the next editorial meeting to see if he'll publish it!

If we publish your photo, we'll give you a one-year subscription to Car Action, or extend your existing one, and you'll even be eligible for our "Readers' Rides Car of the Year Contest" in the fall of '89. Send your photos to Readers' Rides, R/C Car Action Magazine, 251 Danbury Road, Wilton, CT 06897. Start clickin', shutterbugs!

#### AMERICAN MOTORS RC10

Jeremy Robison and his 1/10-scale AMC Spirit Mud Bus are from San Rafael, CA. The car is basically stock, with the addition of Andy's A-arms, a Revo-





#### WEDGE-OUT

This MRP modified wedge sits on a J-Car/ RC10 conversion. The motor is midmounted and the tranny is reversed, resulting in a more scale-like wheelbase. The front suspension is an Associated RC12 lowering block with dyed Pro-Line wheels riding in it. The builder, Nito

Coloneri of East Lebanon, ME, says, "The wing was designed and built for optimum airflow on oval tracks." The wing looks as though it really works. Nito: too bad over-the-body wings are illegal at sanctioned aval races.

#### **DIRT DYNAMICS**

This contemporary eastern-style dirt modified was scratch-built by John Fisler and finished by his friend "Custom" Bob. John runs this car at Rapid Transit Raceway in Schenectady, NY (an indoor clay oval), and we were so impressed with John's modern Mud Bus, that we did a short article on it. Find more details about this body in this issue's "Eastern Dirt Mod."





#### DEDICATED EMPLOYEE

Mike Johnson, of Cypress, CA, says "You could say I take my work to heart." Mike, we think you take your car to work. Twenty-two-year-old Mike works for Coca-Cola and collects Coca-Cola memorabilia, amongst which his car gets misplaced. Mike, we wonder if your boss knows that a happy employee is a productive employee? You deserve a raise. On the other hand, we guess Mike is being treated guite well; they were nice enough to give him his own parking spot for his Modified Wedge.



#### **PETROL PULLERS**

Hard at work in North Pole, AK, James Marshall's Tamiya Midnight Pumpkin and his friend Mike's Blackfoot are responsible for all deliveries during the pipeline construction. The USA would be out of gas if it weren't for these two noble plastic servants. The pipeline, like the shocks on James's Pumpkin, is ail-filled.



#### **READY TO ROLL**

It's John E. Edge from Pensacola, FL, and his WCM Sprinter, which just rolled out of its 1/4-scale garage. The first time out, this oval machine with Hardee's logo took 1st place in the Jackson, MS, Dirt Oyal Jamboree. By the looks of this car; like his driving, John has honed his scale detailing ability to a fine "edge."

#### MONSTER MIXER A LA TONKA

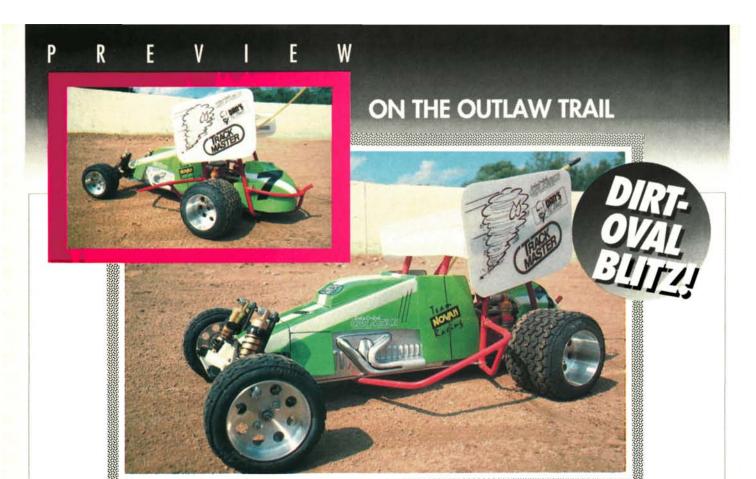
A Tonka cement mixer mounted on a Clod Buster! What can we say, other than: Jon Peters of Escondido, CA, you win Car Action's honorable mention in the Creative Match of the Month Award this month! Needless to say, we'll be seeking more info on this Clod Mixer. Jon says, "The body adds the extra weight it needed to get a 1st-place trophy at the Rad Remotes RC.Car & Truck Pull at our local hobby shop. It also took 2nd place for the 'Raddest' truck award." Form and function; what a great idea!





#### **WATCH OUT!**

Jack Krieger from Easton, PA, assembled this wild dirt modified mud bus from an RCTO chassis using a Big Boy Toys nerf-bar kit, aluminum wheels and tires from Advance Engineering and titanium knock-offs—all of which make Jack's car a knockout.



# SPRINTER

by WALLY DAVID

F THE NAMES of Kinser, Swindell, Wolfgang, Davis, and Allen are familiar to you, you're probably a fan of the winged sprint cars run by the World of Outlaws (WoO) and the United Sprint Association (USA). Originally, a few top drivers traveled around the country to show up at local races and beat the regulars out of the prize money—hence, the name "outlaws." The number of these drivers increased, and now these "outlaws" have an official tour and travel nationwide, putting on their shows

nearly every weekend throughout the year.

With the ever-growing popularity of the full-scale Outlaws has come heightened interest in 1/10-scale sprint cars, and there's an increasing number of kits available to convert your RC10, Ultima and JR-X2 into sprinters.

Now, RCRC\*, located on the grounds of the historic Ascot Speedway, in Gardena, CA, has produced a Challenger-style sprint-car conversion kit to go along with its Gambler kit. This new kit, which is available for

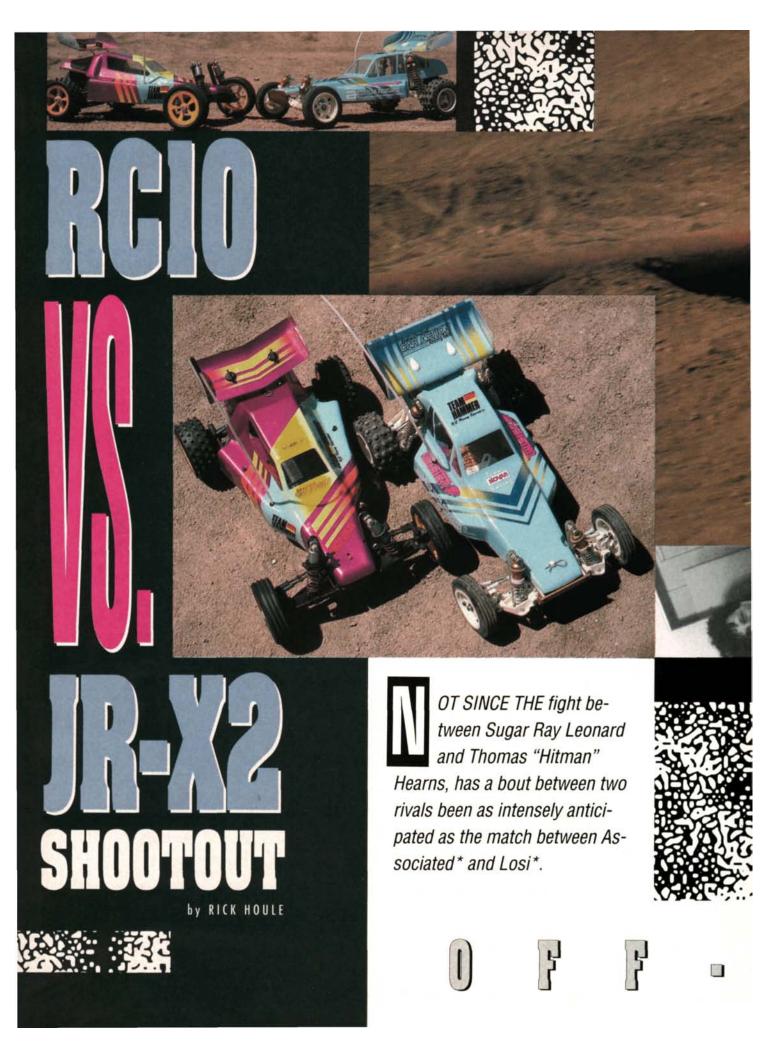
the RC10, the Ultima and the JR-X2, includes a full aluminum roll cage, right and left nerf bars, a rear nerf bar, a graphite or fiberglass chassis, and all the hardware needed to convert your off-roader into an awesome sprinter.

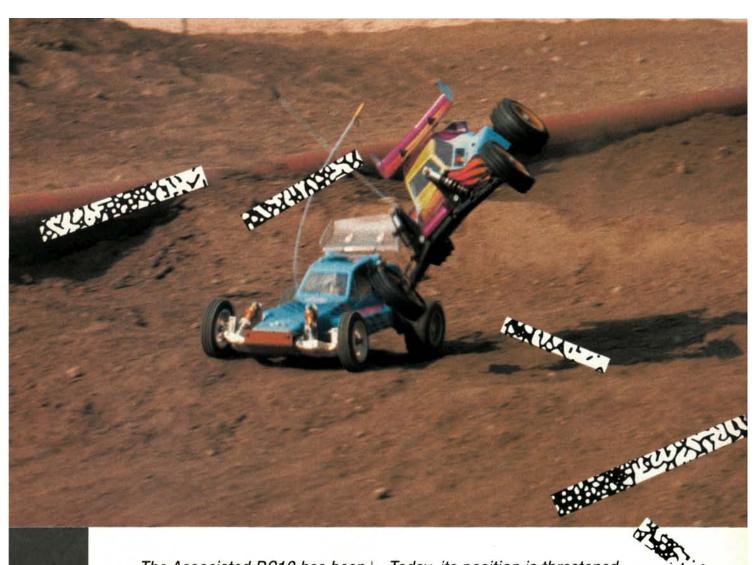
To trick out your sprinter even more, aluminum rims and super-wide tires can be added, along with a variety of bodies made by various manufacturers. The list is almost endless.

Look for a full article on the RCRC Challenger Sprint Car for the RC10 in an upcoming issue of *Car Action*. Find out exactly which body, wheels, tires and chassis I used, and I'll reveal my method of finishing the roll cage and nerf bars, too. Also coming soon is a report on the RCRC Sprint Car for the Ultima.

Until then, keep a lookout for these 1/10-scale outlaws at your local dirt oval.

\*Here's the address of the company featured in this preview: RCRC, 18240 S. Vermont Ave., Gardena, CA 90247.





The Associated RC10 has been the industry standard since it won the inaugural IFMAR Off-Road World Championships in 1985. Today, its position is threatened. Ever since its debut late in the '88 racing season, the Losi JR-X2 has been raising eyebrows. With



















#### **ASSOCIATED**

#### **RC10**

Type         Off-road racer           Scale         1/10           Sug. Retail Price         \$290
DIMENSIONS:           Overall Length         15.125 inches           Width         9.125 inches           Height         6.0 inches           Wheelbase         10.5 inches           Track (f/r)         7.5 inches
WEIGHT: Gross (w/bat.)54 ounces
BODY: Type Off-road buggy Material Lexan
CHASSIS: Type
DRIVE TRAIN: Primary Pinion/spur Transmission Gear drive Differential Ball Bearings Ball bearings
SUSPENSION: Type (f/r)Lower A-arm, upper control link
control link  Dampening (f/r)Aluminum oil-filled, coil-over shocks
WHEELS: Front: Type
TIRES: Front Ribbed Rear Spiked
ELECTRICS:  Motor
Speed Controller Wound rheostat
OPTIONS AS TESTED.

**OPTIONS AS TESTED:** 

Airtronics XL-2P transmitter; Novak NER-2X receiver, NES-1 servo and NESC T-4 electronic speed control; Twister Pro-Stock Motor; Sanyo matched batteries. ever-increasing numbers of enthusiasts entering competitions at local racetracks across the country, the inevitable question is: Which car is the best, out of the box?

My intention for this report was to pit these two cars against each other in box-stock form, with no after-market performance add-ons, apart from the electronic equipment necessary to propel these land missiles.

THE TEST: To ensure a totally objective comparison, great pains were taken to equalize the conditions under which the two adversaries would compete. Both cars were fitted with 27MHz Airtronics\* XL-2P radios and a complete set of Novak\* electronics: T-4 electronic speed controls, NER-2X receivers and NES-1 servos. Mike Walker, owner of Twister Motors\*, supplied two matched Twister Pro-Stock motors, and power came from

matched sets of Sanyo\* SC, SCE and SCR 6-cell battery packs. The venue for this test was the outdoor track of Brake-A-Way Raceway in Norco, CA, deep in the heart of cattle country.

Both cars were built using the manufacturers' recommendations for suspension tuning, gearing, etc. Shawn Beckman, Brake-A-Way's master car builder, built the RC10, and I built the JR-X2. (It took approximately 2½ hours to build each car.) Since both cars are designed to compete in downand-dirty, off-road arenas, we decided to race them in a winner-take-all, best-of-five-heat format.

Ned Morris and Mark "Sparky" Schwenson, the track's co-owners, set up their computer lap-counting system, and several volunteers were on hand to assist with turn-marshalling and track-watering. For the first two heats, the track was dry, but for the last three

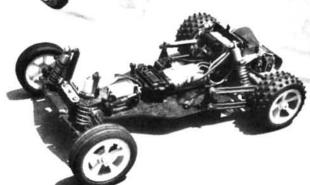
runs, it was watered.

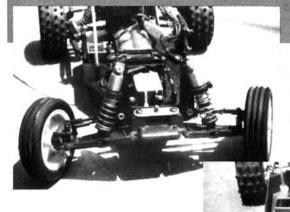
Ned Morris and I have fairly equal driving skills: not world-class material, but definitely above average, and we traded cars after every heat for the first four heats. (The final run was made by a novice and an intermediate driver, but I'll explain that later.)





Both the RC10 (above) and the JR-X2 (right) have a similar layout. The batteries run front to back (although on the RC10, it can also go side to side). They both use a bellcrank-type steering system, and the accessories attach in a very similar fashion. The weight of the graphite chassis plate on the JR-X2 gives it a slight edge.





The JR-X2 (left) is considerably more stable in the front end because of the narrow chassis and the longer A-arms, although the front end of the RC10 (below) is very tough and isn't likely to be damaged.

rounds, the cars were fitted with SCR battery packs, then the motors were switched for the remaining heats. Prior to the recorded runs, both cars were road-tested on the track by running two battery packs each to set their spring rates and diffs for the track's conditions.

During the first heat, it became painfully clear that the RC10's hard rubber, large-knob rear tires were no match in loose dirt for the JR-X2's softer, pure-rubber, mini-spiked tires. The Losi car shot off at the start of every race in a straight line, while the RC10 was a bit "squirrelly" and unpredictable. We anticipated that the RC10's rear tires would perform better on a damp track.

With the first race, the RC10 started from the pole position, but the JR-X2 got the holeshot-as it did in every subsequent heat. By the halfway mark, the JR-X2 had already put a lap on the RC10. On its 8th lap, the RC10 came to a dead stop on the track; less than 20 seconds to the end of the race. The problem turned out to be a battery lead that had apparently overheated and unsoldered itself, which was clearly no fault of the RC10. The average lap time (ALT) of the RC10 before it stopped was 29.7 seconds, compared with the JR-X2's 24.02. The JR-X2 completed 10 laps with a time of 4:00.2 minutes.

Score: JR-X2, 1; RC10, 0.

While the front end of the RC10 was very stable, its rear end was a handful and always wanted to trade places with the front when exiting turns. In an attempt to even things out, we dialed-out

some of the steering "throw" on the transmitter and added a little more spring tension to the front shocks.

In round two (still on a dry track), the JR-X2 again completed 10 laps with an ALT of 24.21, while the RC10 made only eight laps with an ALT of 30.525. With its narrower wheel track, the RC10 tended to roll over when cornering hard to keep up with the JR-X2.

Score: JR-X2, 2; RC10, 0.

For the remaining heats, the track was well watered and, though the RC10 picked up the pace, so did the JR-X2. In the third race, the Losi car made 11 trips around the track with an ALT of 22.645, and the RC10 made nine laps with an ALT of 28.12.

Score: JR-X2, 3: RC10, 0.

In round four, the JR-X2 lost a little time, while the RC10 picked up a little, but the margin wasn't enough for the RC10 to be a threat. The JR-X2 completed 11 laps with an ALT of 22.97, and the RC10 went nine with an ALT of 27.22.

Score: JR-X2, 4; RC10, 0.

For the fifth, and final, round, with the JR-X2 already in a commanding lead, we decided to try something different: An intermediate driver, Shawn Beckman, was given the controls of the RC10; while a novice driver, Randy

#### TEAM LOSI

П	R-X2	

Scale	
oug. Kerali Price	\$299.93

#### **DIMENSIONS:**

14.75 inches
9.625 inches
6.375 inches
10.5 inches
8.625 inches

#### WEIGHT:

Gross (w/bat.)	52 ounces
----------------	-----------

#### BODY:

	Off-road buggy
Material	 Lexan

#### CHASSIS:

Type	 Flat pan
Material	 Graphite

#### **DRIVE TRAIN:**

Primary	Pinion/spur
Transmission	Gear drive
Differential	Ball
Bearing	Ball bearings

#### SUSPENSION:

Front:	Туре	Lower A-arm/upper
		control link
	Dampening	Aluminum oil-filled, coil-over shocks
D	T	
Kear:	Damponing	i-link trailing-arm system Aluminum oil-filled,
	Dumpening	Aluminum on med,

#### WHEELS:

Front:	TypeOne-piece five-spoke
	Dimensions (DxW) 2.375x.75
	inches
Rear:	TypeOne-piece five-spoke
	Dimensions (DxW) 2.1875x
	1.375 inches

#### TIRES:

Front	Low-profile, grooved
Rear	Low-profile, groovedLow-profile, spiked

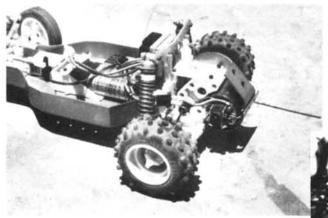
#### ELECTRICS

Meter	05/5/0/
Motor	05/540 (not included)
Battery Type Re	quired 6- or 7-cell stick
	(not included)
Speed Controlle	r Electronic (not
	included

#### **OPTIONS AS TESTED:**

Airtronics XL-2P transmitter; Novak NER-2X receiver, NES-1 servo and NESC T-4 electronic speed control; Twister Pro-Stock Motor; Sanyo matched batteries.

coil-over shocks



The major difference between the two cars is in the tail section. The RC10 (left) has an external differential with a Lexan cover; a 32-pitch gearbox; 11/2inch 3-piece wheels; and A-arm rear suspension with adjustable upper links. The JR-X2 (below) has an internal differential with 48-pitch gears, 2.1inch one-piece wheels, and five-link rear suspension that many consider the best.

Randles, took command of the JR-

At the start of the race, the JR-X2 took the expected holeshot and began to pull away. The outcome of this final race was merely a reflection of the previous races: The JR-X2 came out ahead, even in the hands of a less experienced driver. The RC10's rear tires just couldn't find any traction, and that's the main reason why anyone who's serious about racing usually replaces these items first.

Score: JR-X2, 5; RC10, 0.

CONCLUSIONS: There were no areas in our test where the RC10 was superior in performance, but I've found that it has a remarkably strong, versatile chassis.

Since it has been around for so long, there are more after-market performance parts and conversion kits available for the RC10 than any other car, but during the short time that the JR-X2 has been available, many after-market goodies have been introduced, and more are coming out all the time.

Indeed, the box-stock RC10's biggest drawbacks in our test were the hard rubber rear tires mounted on 13/4-inch rims (compared with the JR-X2's low-profile, soft rubber tires on 2-inch rims)and its considerably narrower wheel track.

On the other hand, the JR-X2 enjoys a definite advantage in the drivetrain area. The JR-X2 tranny comes fully equipped with 48-pitch gears that are much smoother and quieter than the RC10's 32-pitch gears. Remember that any noise you hear from a tranny translates into fric-

tion that translates into drag. The universal-type drive shafts on the JR-X2's rear end had less end-play than the dogbone type on the RC10. The JR-X2's differential is fully enclosed and adjustable from the outside, while the RC10's diff is mounted on the spur gear. Though protected by a gear cover, it requires more frequent cleaning and must be taken apart every time the spur gear is changed.

The JR-X2's graphite chassis is lighter than the RC10's aluminum tub and offers less chance of glitching from electrical interference to the receiver from the motor.

In the area of suspensions, the Losi car's unique five-link rear suspension seemed to soak up the rough stuff a little better than the RC10's A-arms. Also, the longer front A-arms on the JR-X2 offered more shock travel and front-end stability than the RC10.

It's obvious that the JR-X2 is superior to the RC10 in its current boxstock form, and that's probably why Associated has now introduced an upgraded version of its old tried-andtrue workhorse.

The new RC10 Graphite comes with a graphite chassis, wider front Aarms, a new front-shock mount with multiple positioning holes, Delrin idler gears, in-line steering blocks and axles, and low-profile TQ rims and tires.

You asked for it; we gave it to you. The stock box RC10 versus JR-X2 Shootout was won by the new kid on the block, the JR-X2. As the RC10 Graphite becomes available, we'll see about staging a rematch.

Editor's Note: Look for the 2WD Shootout between the RC10 Graphite, JR-X2, Kyosho Ultima Pro, Kyosho Maxxum, Schumacher Top Cat and MRP Stage II in a future issue of Car Action.

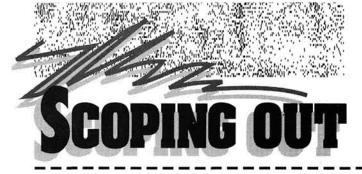
\*Here are the addresses of the companies mentioned in this article:

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626.

Team Losi, 1655 E. Mission Blvd., Pomona,

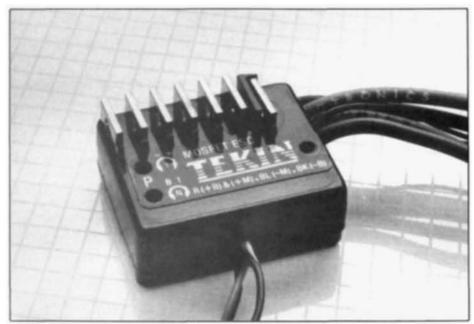
Airtronics, Inc., 11 Autry, Irvine, CA 92718. Novak Electronics, Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707

Sanyo Electric, 200 Riser Rd., Little Ferry, NJ



by JOHN RIST

# **BULLETPROOF BARGAIN: TEKIN ESC 300PT**



While it's easily placed into a 1/12-scale car, the diminutive 300PT is rugged and has a smooth response.

NEW BUZZ word has been heard in the world of FET speed controllers: "Tempfet." The obvious question is: "What can do they do for me, and do they help or hinder performance?"

In this month's "Scoping Out," I look at the Tekin\* ESC 300PT, which is Tekin's mid-priced seven-FET racing speed controller. Tekin has the ESC 250, which is its non-Tempfet model that requires a fuse; the ESC 300PT, which is its cheapest Tempfet model; and the 600PXT, which is its selected Tempfet model. The ESC 300PT has the following features:

- racing-style, forward-only with brakes
- seven FETs: six forward and one reverse
- Tempfet FETs that eliminate the need for fuses
- handles 4 to 10 cells
- built-in LED for setting full throttle and brake
- a full set of Tamiya-style connectors and a choice of receiver connector
- full set of heat sinks
- motor capacitors, screwdriver and instructions
- 120-day warranty

Since I'm an engineer, I always take apart a new speed controller to see how it looks inside, but if you don't have a lab setup that protects against static electricity, don't work on your own speed controller. Besides, if you have any trouble, you can use Tekin's fast, reasonably priced repair service. I found that the ESC 300PT is well constructed; the pc board is epoxy-glass; and the solder joints look good. Enough of looking; it's time for testing!

My lab has an oscilloscope, a digital voltmeter, a resistor load bank and a 6V, 30-amp electricity supply. The oscilloscope is used to monitor the controller's output to guarantee that it's fully on. The digital voltmeter is used to take all the voltage-drop readings and to verify the current-meter's reading. The resistor load bank is a bank of 40, 12-ohm, 5-watt power resistors that can be switched on and off, one at a time, to vary the load between .6 amp and 20 amps. In series with the resistors is a 25-amp Simpson current meter and a 1-percent .01-ohm resistor. By measuring the voltage drop across this resistor, the current-meter

#### TEST DATA ESC 300 PRO T

#### **DIMENSIONS:**

Height	5 inches
HeightWidth	5 inches
Length	1.1 inches
Weight (w/out wires)	1.2 ounces
Access to Controls	Good
Ease of Adjustment	Fair
Warranty	

#### **ELECTRICAL:**

(Manufacturer's Specs)	
Max Voltage	10.2 volts
Min Voltage	4.8 volts
Max Current Forward	720 amps
Continuous Current Forward .	240 amps
Resistance	

#### **TEST PARAMETERS:**

Voltage	volts
Current12	amps
Voltage Drop with Connectors24	volts
Resistance with Connectors02	ohm
Voltage Drop, 2-inch wire0	7 volt
Resistance, 2-inch wire0058	ohm
Retail Price\$11	

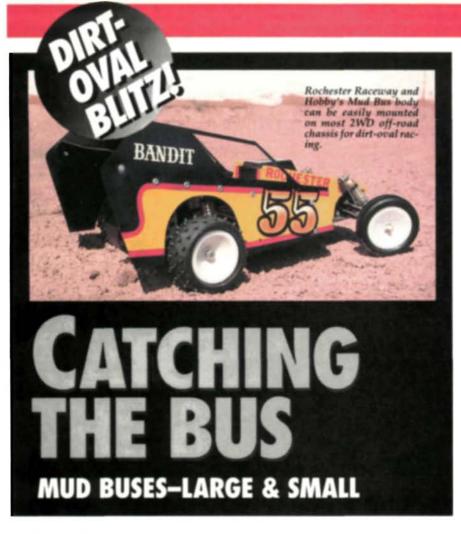
#### COMMENTS:

Indestructible Tempfet technology. Resistance as low as other FET controllers tested. Smooth response and glitch-free operation. Compact size makes it perfect for 1/12- and 1/10-scale cars. Adjustments are misaligned with the holes in the cover; supplied screwdriver is useless. A jewelers' screwdriver takes care of these problems. The ESC 300PT should be a real race contender.

reading can be double-checked. Of course, the lab power supply provides the test current.

With all racing-style speed controllers that come with battery and motor connectors, I run two tests. First, I measure the voltage drop from battery connector to motor connector, including wire. Then I use needle probes to measure the voltage drop at the 2-inch point on the wires. I chose this length of wire because it's the

(Continued on page 111)



F YOU'VE EVER wondered why you couldn't see the similarities between a Dirt Modified (Mud Bus) car and the street version, there's a good reason: There are none. About the only thing they have in common is the name. Some time ago, these cars were called Gremlins, because they resembled the boxy AMC automobile of the same name. However, the designs were updated as the desire for better aerodynamics increased.

A very popular body now being raced is the Ford Probe. There doesn't seem to be any relation between the Probes seen cruising around town and those found sliding sideways around the dirt ovals. Some say that there's a resemblance in the side rear windows, but I can't see it.

Regardless of how they look, Mud Buses are very popular in the Northeast. Many dirt ovals of various sizes draw large crowds to their weekly shows. Spectators who attend regularly come to root for their favorite dirt warriors, and these local heroes are as popular at their local tracks as

a Bill Elliot or a Harry Gant are around the country.

Because of the popularity of the

closer to racing if he can detail his car to look like the car he roots for every Saturday night. These bodies, usually mounted on off-roaders like the RC10, the JR-X2 and the Ultima, give the thrill of open-wheel racing while still allowing the use of a full-width chassis (unlike most sprint cars, which require a narrow chassis). They also give the modeler more room with which to work when designing a paint scheme

There are a number of Mud Bus bodies currently available on the market. Parma\* has two different versions of the older Gremlin style, BoLINK\* has recently introduced the Ford Probe, and Rochester Raceway and Hobbies\* makes a very realistic Mud Bus. The Rochester body actually comes in three pieces. The front nose section is made of vacuum-formed Lexan, while the roof and side panels come as a flat piece of Lexan that must be folded along pre-scored lines. The third piece, also of flat Lexan, forms the internal wing.

Watch for the Rochester Raceway and Hobbies' Mud Bus and the BoLINK Ford Probe in future articles.



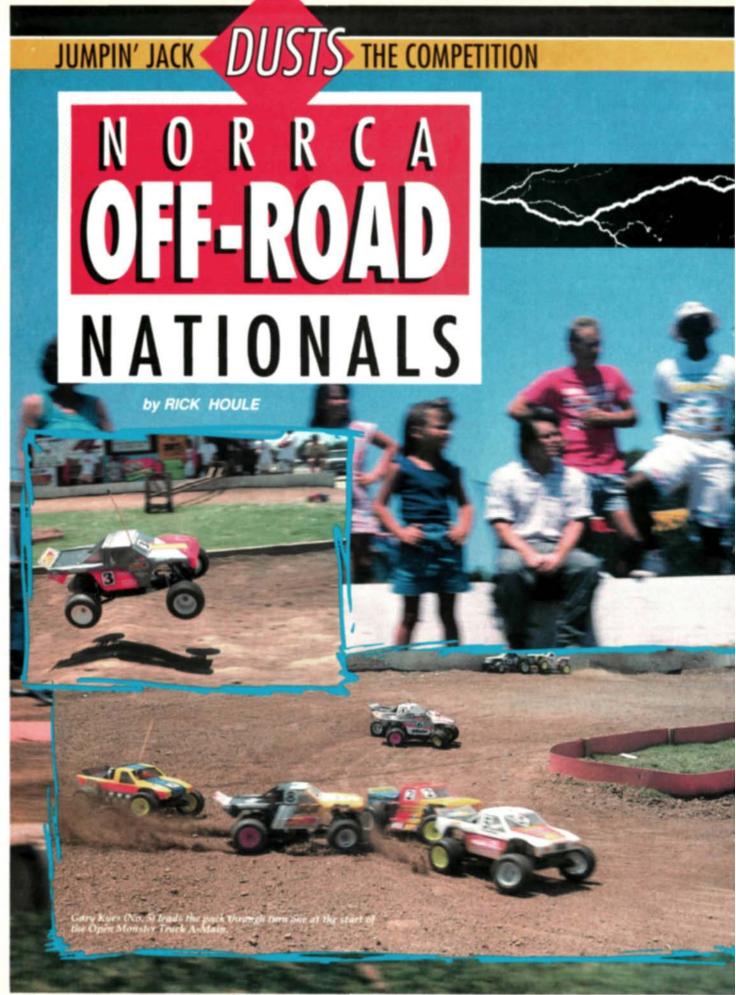
The original full-scale Mud Bus bodies faintly resembled the body of the American Motors Gremlin.

full-size Mud Buses, 1/10-scale Mud Bus bodies are the rage for dirt-oval racing. It's not unusual to see 30 or 40 cars on a Sunday afternoon, with most of the bodies painted like fullsize cars. An R/C hobbyist can feel

\*Here are the addresses of the companies mentioned in this article:

Parma International, Inc., 13929 Progress Parkway, North Royalton, OH 44133. BoLINK R/C Cars, 420 Hosea Rd., Law-renceville, GA 30245.

Rochester Raceway and Hobbies, 1725 N. Clinton Ave., Rochester, NY 14621.





the Best Team Cup, but everyone was kept in suspense until all the points had

been carefully tallied on Sunday.

# NATIONALS



Super Stock Truck A-Main action.

The track itself had been completely rebuilt for the Nats. The straightaway running directly in front of the drivers' stand led into a narrow S-turn that saw a lot of action all weekend. After the "S," drivers had to negotiate a large "Peri-Stile" turn with "step downs" on its

exit side, and this led into a short straight riddled with "stutter bumps." After this, drivers had to negotiate a diagonal jump just before entering the "Pit of Doom." After surviving the pit, they were faced with a banked left turn leading to double jumps and then a left-turn sweeper. Then they were back at the straightaway. The Metro track crew did an excellent job, keeping the course in primo shape throughout the event.

The Team Losi group was out in force experimenting with many tire designs and rubber compounds. Their hottest monstertruck items were the revolutionary new tires that are basically oversize versions of Losi's famous JR-X2 tires. Some of the Team Losi cars also used the new "Cushion Carcass" rear tires (scheduled to be available by the

time you read this) and the new "Stagger Rib" front tires. Every Losi car in the 2WD Stock and 2WD Open Classes sported the new Losi H-Arms, while its Monster Truck entries had the standard JR-X2, five-link rear suspension.

"Pops" Losi was on hand all weekend to keep close tabs on the lap times of his charges, and he even donated a complete JR-X2 car kit to a lucky entrant.

Other luminaries at the Nats included Dan Moynihan of Dan's R/C Stuff, Eustace Moore of MIP, Neil McCurdy of Revtech and guest announcers, Gary Kyes, Roland Bailey and Warren Reed.

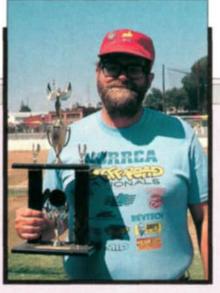
Thursday, July 6: Check-in and open practice began at 8 a.m. Drivers who had entered in the Stock Classes were given a stock (27turn) Losi motor, each one numbered and assigned to a specific driver. These motors were mandatory for qualifying and the Mains, and additional motors were available for \$10. All those who had preregistered also received a commemorative T-shirt. Once qualifying got underway, there was no more open practice time until after the fourth round on Saturday, so the need to get cars dialed-in was criti-

### **CONQUERING**

PRETTY fair racer. Bruce Chamberlain qualified 6th in the 4WD Stock A-Main event during the '89 NORRCA Off-Road Nationals. Bruce's hearing is impaired, so he can't hear the buzzer that starts and stops each race. This was a major problem

for Bruce at a previous national event, but not at the NORRCA Nats.

Bruce, a technical expert and personnel manager at Apple Computers in Cupertino, CA, says he didn't do as well at the previous event: "I was rear-ended at the start of each of my heats because I had to react to all of the other cars when they took off from the starting line. At my local track in San Jose, they use a red flag to start and finish each of my races, and I've held the 4WD Stock track record there for



### **OBSTACLES**

the last two years," he explained. "Before I sent in my entry for the NORRCA Nationals, a friend from my company called to ask if they would accommodate me with some form of visual indicator." J.R. Sitman, NORRCA's president. assured Mr. Cham-

berlain that they would make provisions for him at the event.

Mr. Sitman acquired a red flag, and he personally started and finished each of Chamberlain's races with it. Chamberlain was also given a printed copy of the instructions discussed at the drivers' meeting. Although his car suffered rear-end damage during the start of the A-Main, Chamberlain still finished in 9th place no mean feat in a field of 300 entries!

cal

Open practice went smoothly—no major frequency problems; this was quite a feat, considering the overwhelming number of drivers trying to get time on the track.

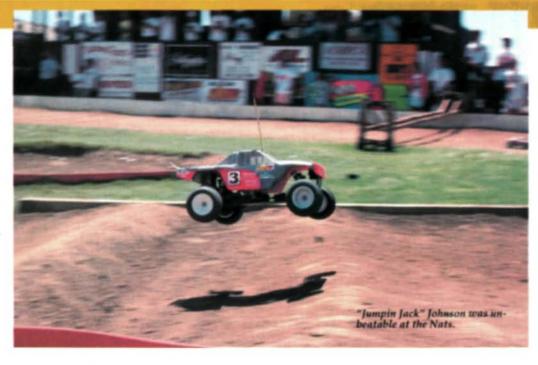
The first round of qualifying started at 2 p.m., and there were 41 heats! By the end of the day, Team Losi was in the lead for the Team Cup by five points, while the other teams—JG Mfg., MIP, Revtech,

A&L Mfg. and Race Prep—looked forward to a better tomorrow. After a hard day of qualifying, racers met at their hotels to party and water-fight in the pools.

**Friday, July 7:** With a record number of heats to be run (two rounds that day), the organizers were anxious to get started, and things kicked off at 7:30 a.m. with Concours judging. CRP's Joe MacGregor won 1st place with a JR-X2 painted in the

team's yellow and black; Dave Sanders took 2nd with a painstakingly detailed RC10 truck with full interior and blown model engine; and Bob Kaufman took 3rd with his JR-X2 truck.

After round two, the Race Prep team was in the lead for the Team Cup by a narrow margin of less than one point,



but after round three, Losi led comfortably by eight points.

**Saturday**, **July 8**: The fourth, and final, round of qualifying kicked off shortly before 9 a.m. Team Losi appeared to hold a commanding lead in points, but the official word wouldn't be given until the next day.

On Saturday afternoon, the hordes of spectators crowding the track were treated to a "winner-take-all" Trophy Dash Ex-

hibition Race between the top four qualifiers of each class.

First to the line were the 2WD Open drivers: (in qualifying order) TQ, Jack Johnson (Team Losi), Kyle Reed (Team Losi), Gil Losi Jr. (Team Losi) and Chris Allec (Team A&L). Pole-sitter Johnson took the holeshot at the buzzer and never looked back as he took the trophy in a brilliant wire-to-wire victory!

The 4WD Open drivers were: TQ Steve Dunn (Team Race

Prep), Scott Anfinson (independent), Rick Vehlow (Team Associated) and Jay Kanemoto (independent). The independent drivers did a great job and gave the factory drivers a run for their money, but the hard-charging Dunn took the sole trophy for this event.

The Open Monster Truck drivers were: TQ Jack Johnson, Ron Rossetti (Team Losi), Gary Kyes (Team Losi) and Steve Dunn. Johnson, or "Truck Master General," as christened by pit mates, pulled off another great victory!

The 2WD Open Trophy Dash drivers met once again for the 2WD Stock race: Johnson, Reed, Allec and Gil Losi Jr. This time, it was Johnson's teammate Reed who





The two AYK Pro Radiants of Race Prep's heavy hitters: Mike Dunn (No. 2) and Steve Dunn (No.3).

### NORRCA OFF-ROAD NATIONALS



Proud trophy winners at the end of the NORRCA Off-Road Nationals.



into the A-Mains and no more practice runs to adjust the diff. If you weren't ready by now, you were in big trouble!

### 2WD Open A-Main

With 85 entrants, this was the largest class, and 14 was the maximum number of laps that any

took the gold for the win.

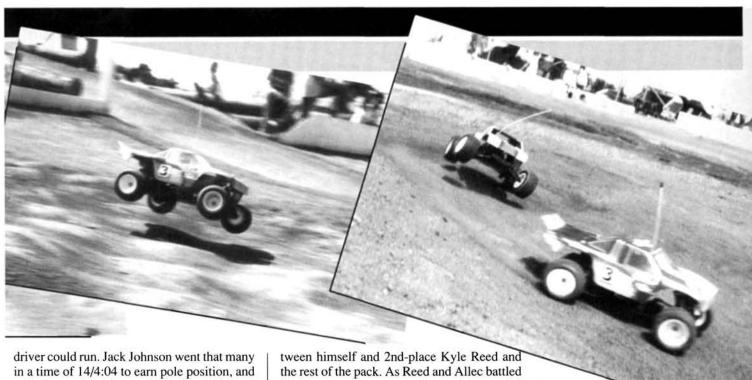
The 4WD Stock drivers were: TQ Phil Vitale (independent), Nick D'Amico (independent), Gary Kyes and Joe Martin (independent). Kyes took the gold in this one.

The Super Stock Truck drivers were: Reed, Jeremy Kortz (JG Mfg.), Steve "The Big Kahuna" Ozuna (independent) and Tem Raskin (Team Race Prep). Reed added another trophy to his collection by taking the win.

At the end of the day, drivers had a final chance to practice before the next day's main events, but Jay Halsey (Associated's superstar) was the only "big leaguer" at the track. Accompanied by his father, Jim, Jay was getting his car dialed-in. Would his efforts pay off?

Sunday, July 9: This was it! No more chances to make it

	I	DRIVER	CAR	MOTOR TIRE	S (FRONT/REAR)
		وووور			2WD OPEN
1 2 3 4 5 6 7 8 9		Jack Johnson Jay Halsey Kyle Reed Chris Allec Derk Furutani Joe Schmitz Gil Losi Jr Ron Rosetti Steve Dunn Mike Dunn	JR-X2 RC10 JR-X2 A&L prototype JR-X2 Graph-10/MIP JR-X2 JR-X2 JR-X2 JR-X2 JR-X2	Losi Revolution Reedy Losi Revolution Twister Peak Performance Twister Losi Revolution Losi Revolution Race Prep Race Prep	Stock/stock Race Prep/Yokomo Losi/stock n/a Losi/stock n/a Stock/Losi Stock/Stock Stock/stock Stock/stock
			00000		4WD OPEN
1 2 3 4 5 6 7 8 9		Jay Halsey Jay Kanemoto Chris Allec Rick Vehlow Steve Dunn Mike Dunn Scott Anfinson J.D. Beckwith Eustace Moore Jr. Ron Rossetti	YZ-10 Yokomo A&L/Optima YZ-10 Pro Radiant Pro Radiant Yokomo YZ-10 MIP/RC10 Optima Mid SE	Reedy Cam Twister Reedy Race Prep Race Prep Reedy Reedy Reedy Reedy Losi Revolution	Stock/stock Schumacher/Associated n/a Associated/Yokomo Tamiya/Associated Yokomo/Race Prep Losi/Yokomo Stock/stock Stock/stock Stock/stock Schumacher/Losi
		10000		OPEN M	ONSTER TRUCK
1 2 3 4 5 6 7 8 9 10	S G G T   R E	ack Johnson Ion Rossetti Iteve Dunn Iary Kyes Iary Guest Iem Raskin Ion Anderson Iichard Jamieson Iustace Moore Jr. Ivennis Taylor	JR-X2 JR-X2 JR-X2 JR-X2 RC10 JR-X2 RC10 JR-X2 RC10 JR-X2	Losi Revolution Losi Revolution Race Prep Losi Revolution Peak Performance Race Prep Twister Losi Revolution Reedy Losi Revolution	Losi/Losi Losi/Losi Losi/Losi Losi/Losi Losi/Losi Killians/Losi Losi/Losi Losi/Losi Losi/Losi



driver could run. Jack Johnson went that many in a time of 14/4:04 to earn pole position, and only three other drivers—Kyle Reed, Gil Losi Jr. and Chris Allec—managed to break the 14-lap barrier.

At the start, Johnson blasted off the pole and wasted no time putting plenty of distance be-

tween himself and 2nd-place Kyle Reed and the rest of the pack. As Reed and Allec battled for the runner-up spot, Jay Halsey (who started from the third row on the grid) steadily moved up, and with 10 of the country's hottest racers giving it all they had, I'm sure you can imagine the intensity of the competition. Johnson

off back-markers
one by one until he came up to
5th-place Joe Schmitz and decided to ease back on the throttle
for a few laps before hammering down again.

Meanwhile, Halsey had worked his way into the runner-up spot (about half a lap behind the leader) and was holding off Reed. Johnson crossed the finish line in 1st (with a full lap on the field); Halsey came in 2nd and Reed held onto 3rd.

### 4WD Open A-Main

All 10 starters in the 4WD Open A-Main event qualified with 14 laps, but Steve Dunn posted the best time of 14/4:04 (also the fastest qualifying time at the Nats) and earned the pole position.

Very early in the A-Main, the entire field piled up in the first turn! Independent driver Jay Kanemoto made it out of the wreckage first, followed closely by Rick Vehlow and class TQ, Steve Dunn. The wreck took its toll: Ron Rossetti's Optima Mid's suspension was broken and the car had to be pulled off after only one lap.

Kanemoto drove the race of his life as Dunn "breathed down

	DRIVER	CAR	MOTOR	TIRES (FRONT/REAR)
2WD S	тоск			
1 2 3 4 5 6 7 8 9	Jack Johnson Mike Dunn Jon Anderson Gil Losi Jr. Kyle Reed Derek Furutani Chris Allec Eric Beier Scott Anfinson Joe Schmitz	JR-X2 JR-X2 RC10 JR-X2 JR-X2 JR-X2 JR-X2 A&L prototype RC10 n/a Graphite-10	Losi Losi Losi Losi Losi Losi Losi Losi	Stock/stock Stock/stock Losi/Associated Stock/Losi Losi/stock Losi/stock Losi/Yokomo Losi/Losi n/a Losi/Pro-Line
1 2 3 4 5 6 7 8 9	Dominic Sellers Gary Kyes Phil Vitale Nick D'Amico Neil Rabara Tom Clark Joe Martin Eddie McKay Bruce Chamberlain Jeffrey Benmoin	A&L 4x4 prototype Optima Mid Optima Mid Yokomo Yokomo AYK Pro Radiant Optima Mid Cat n/a MIP/RC10	n/a Losi Losi Losi Losi Losi Losi Losi Losi	Schumacher/Schumacher Schumacher/Associated Top Cat/Associated Associated/Associated Associated/Losi Associated/Losi Yokomo/Associated Stock/stock n/a Losi/Losi
SUPE	R STOCK TRUCK			
1 2 3 4 5 6 7 8 9	Kyle Reed Tem Raskin Jeremy Kortz Brian Kinwald Steve Ozuna Bob Kaufman Scott Roberts John Smith Gary Kortz Ed Josties	JR-X2 JR-X2 JR-X2 JR-X2 JR-X2 JR-X2 JR-X2 JR-X2 JR-X2 JR-X2 JR-X2	Losi Losi Losi Losi Losi Losi Losi Losi	Losi/Losi Losi/Losi Losi/Losi Losi/Losi Losi/Killians n/a JG/JG n/a



his neck." Though he ably met Dunn's challenges in the turns, Kanemoto didn't have as much horsepower as Dunn, whose Race Prep-powered Pro Radiant eventually shot past Kanemoto's Yokomo on the straightaway and into the lead. Meanwhile, Jay Halsey (having started on the fifth row, this time) steadily moved his way up to the front with his Reedy-powered YZ-10. Dunn continued his lead as Halsey began to pressure him.

As Halsey and Dunn went fender-tofender, Christ Allec moved in to join the fray. Dunn ran into trouble and lost his position because his car just seemed to lose power, and at the wire, it was Halsey in 1st place, Kanemoto in 2nd and Allec in 3rd.

### Open Monster Truck A-Main

Jack Johnson was definitely Losi's "Truck Master" and, to say the least, he was really "hooked-up." The only driver to qualify with 14 laps in this class, Johnson didn't let up going into the Mains. The field for the A-Main was made up of seven JR-X2s and three RC 10s, but all the trucks sported the new Losi rubber tires.

At the start of the A-Main, Johnson blasted off the pole and immediately began to put plenty of distance between him and the rest of the pack! Ron Rossetti followed in the runner-up spot, with Steve Dunn on his tailgate. Dunn passed Rossetti for the runner-up spot, but rolled over in the Pit of Doom. Something went south

in Dennis Taylor's tranny and he was out after only five laps. By the halfway mark, everyone had settled into the positions in which they eventually finished: Johnson 1st, Rossetti 2nd and Dunn 3rd.

### 2WD Stock A-Main

In an encore performance, Jack Johnson was the only driver to complete 14 laps in this class during qualifying, and he kept the steam up in the A-Main.

Johnson managed to avoid the massive turn-one pileup that caught the other drivers off-guard, and Mike Dunn pulled in behind him, while Chris Allec trailed behind these two leaders. Independent driver Jon Anderson was showing his stuff as he battled with the heavy hitters, soon edging out Allec for the 3rd spot and challenging Dunn for 2nd! At the wire, Johnson took the checkered with Dunn in 2nd (both posted 14-lap runs) and Anderson in 3rd.

### 4WD Stock

With Phil Vitale in the pole position, all 10 drivers in the A-Main qualified with 13 laps, and this promised some pretty close competition.

The 4WD Stock A-Main was started with a red flag instead of the usual buzzer, as one of the drivers, Bruce Chamberlain, is deaf. Having encountered opposition to his need for special arrangements at other major events, Chamberlain appreciated NORRCA's accommodating attitude, and all drivers should encourage this type of good sense at every level of racing.

At the drop of the flag, Nick D'Amico's Yokomo shot off the line for the holeshot, while Joe Martin and TQ Phil Vitale battled for 2nd with their Optimas. Jeffrey Benmoin found himself in 3rd, but only until A&L's young Dominic Sellers moved alongside the leaders. A massive Lexan-trading "party" just before the Peri-Stile caught the leaders off-guard, and Vitale jumped into the lead with Sellers chewing on his wing! Vitale held 1st for most of the race, then trouble with back-marker traffic caused a few changes, and, at the wire, it was Sellers followed by Kyes and Vitale.

### Super Stock Truck A-Main

In qualifying, Losi's newest talent, Kyle Reed, was the only driver in this class to complete 13 laps. The starting grid was totally dominated by converted JR-X2 trucks, all sporting the standard Losi fivelink rear suspension.

Reed took the holeshot, but Tem Raskin and Jeremy Kortz weren't going to let it him win easily. Kortz's father, Gary, had told me, "my biggest thrill would be to race with Jeremy in the A-Main of a major event," and father and son were doing just that in the final race of the day. Reed took the win followed by Raskin and Jeremy Kortz.

In the awards ceremony that immediately followed the last race, with 14 points more than the other teams, Team Losi was declared the best team at the Nats and awarded the beautiful Team Cup. In fact, there's a rumor that Pops had to rent an extra U-Haul trailer just to take home his team's trophies!

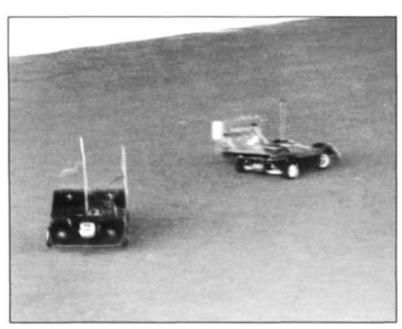
Kudos to NORRCA for pulling off one of the finest R/C races held this year, and NORRCA thanks these sponsors: Revtech, Novak, Pro-Line, Team Losi, Dan's R/C Stuff, R/C News, McCallister Racing, TMS Products, JG Mfg., MIP, Action Trophy, Team CRP, Race Case, A&L Mfg., Robinson Racing, Autographics and Team Hammer.

The owner and proprietor of Metro Raceway, Al Sandrini, extends his special thanks to Edge Products, BoLINK, Frito-Lay, Custom Works and the Kern County Department of Parks and Recreation—and WE all thank ALL these for a great four days!

# JG DIRT OVAL CHAMPIONSHIP

by DANNY BATINICH

# SIXTH ANNUAL RUNNING



the majestic Sierra Madre Mountains on the west and the Sierra Nevada Range to the east is the San Joaquin Valley—affectionately known as "The California Heartland." The hub of this rural community, Bakersfield, is the home of Racers' Haven, one of the West Coast's premiere racing facilities and site of the 6th Annual JG Mfg. Dirt Oval Championships.

Billed as "the most prestigious dirt-oval race in America," the event brings competitors from everywhere. This year's winner of the "Longest Haul" award was Bill Frame of Poughkeepsie, NY, who was sponsored by American Hobbies of Englishtown, NJ. Other entrants came from Pennsylvania, Michigan, Arizona and, of course, there was the usual bunch of Californians. Bill's trek won him a nice Dremel Tool Kit.

Bright and early on Friday morning, a small crowd gathered in the pits. The first day's schedule included sign-ups, tech inspections and three full rounds of qualifying for each class.

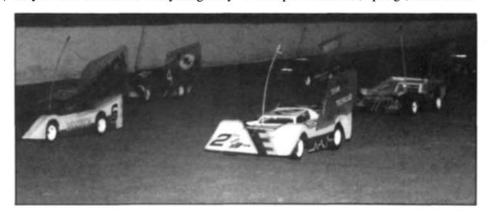
It was easy to tell that no particular tire combination had been dialed-in yet, as during the first round of heats, pushing front ends and "squirrelly" rear ends were very evident. As the day went on, most found that foam tires worked best. The dirt on this track stays hard and is usually very smooth (as dirt tracks op)—smooth enough to allow Gary McAllister to run his Outlaw on-road racer to the 23rd qualifying position in the Two-Wheel-Drive Class.

At the end of day one, it was obvious that there was more work to be done in the pits. Many of the drivers were unhappy with their times, and a lot of them stayed late to dial-in everything they could, for they knew the next day's program wouldn't be for the weak. Remember, there were only four classes of cars: Modified Sprints, Modified Two-Wheel-Drive, Modified Four-Wheel-Drive, and, for the first time at a JG championship, Modified Monster Trucks. There were no stock or novice classes; this event is for the "hot dogs"!

On Saturday morning, the pits were full: This would be the busiest day of the weekend, and it was time to kick up some dust! The Monster Truck Class was the first to the line. We all thought that these big, tired, overpowered, unstable monsters would be all over the track, but boy, were we surprised! They handled as well, if not better, than the other classes. Openwheel racing is tough enough without having big balloons where tires belong, but these raced door-to-door in every heat. When the dust had settled, the top three qualifiers, in order, were: John "Hammer" Smith, Tem Raskin and Jeff Jardine.

Take a World of Outlaw's sprint car, shrink to \(^{1}/10\) scale, and behold, the only thing that has shrunk is its \(size\). The power is still there; the dirt-flinging excitement is still there; and the thrills and spills are still there. After two days of qualifying, the Modified Sprint Class looked like this: Martin Buchanan held the TQ spot; 2nd went to Darryl Reich, and John Peterson qualified 3rd.

Most of us are familiar with 2WD and 4WD dirt cars: RC10s, Ultimas and Dominators (you know—good old dirtstompin' machines; springs, shocks and





A-arms for driving dirt). TQ Tyler Clements edged out Eddie Knoles by 36 hundredths of a second, and they both outclassed the rest of the field by one lap. Rob Cutman qualified 3rd.

The 4WD rocket ships were dominated by the Custom Works Dominators. As I went around the pits, I asked many Dominator drivers about the parts upgrades and modifications they had made. They all said something like, "You don't mess with Tem Raskin captured 2nd place with 1st- and 4th-place finishes in the two Mains; Jeff Jardine ended up in

John Peterson finished 2nd in the first Sprint car A-Main behind TQ Martin Peterson Buchanan.

> won the overall JG Sprint Car

title by winning the second A-Main, while Buchanan finished a disappointing 10th. Tyler Clements just barely beat Jim Gouge into 2nd place, and both finished with eight points, following 5thand 3rd-place finishes. (Clements had finished with 68 laps in the dual A-Mains, while Gouge was one lap behind with 67 laps.)

Charles Reisbol won the 2WD Championship, beating Eddie Knoles by just 5 seconds. Both drivers completed 78 laps while swapping 1st

and 2nd places in the dual Mains. Tom Clark used two 4th-place finishes to earn



This sprint car features a completely tubular chassis, a design that's becoming more popular with sprint car manufacturers.

3rd place overall.

Third-fastest, Curtis Strawn, won the first 4WD A-Main, and Jim Dieter came in 2nd. Strawn finished right behind Dieter in the second Main as Dieter again captured 2nd place, but Strawn won the title because his combined 78-lap total in 8:06.13 just edged out Dieter's 78 laps in 8:09.05. Casey Roy came in 3rd overall with 5th- and 4th-place finishes in the two Mains.

Once again, the JG Mfg. Championships lived up to its billing. This is still the most prestigious dirt-oval event in the country, and we congratulate John Gudvangen and all the folks at JG Mfg. for their efforts. We'll be seeing you at the 7th annual!

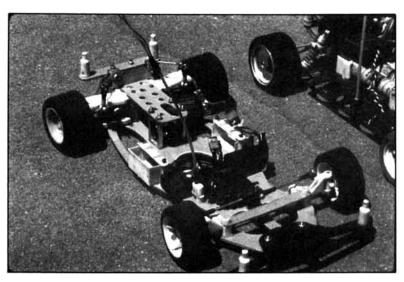


a Dominator!" Erik Soderquist, the TQ in this class, was two laps faster than the TQ in any of the other classes. Four of Soderquists's six attempts were in the 40lap range, and his last attempt netted 41 laps right at the buzzer. Jim Dieter qualified 2nd and Curtis Strawn was 3rd.

The field was now set for the finale. Sunday's Mains organizers told the drivers who they were going to meet, but didn't tell them how. After the action of the previous two days, there were no clear favorites. Each class had double A-Mains and two races would determine the winners.

In the Monster Truck A-Mains, John "Hammer" Smith backed up his TQ position by taking 1st place in the first Main and finishing 3rd in the second one. His three-point total was good enough to win the first JG Oval Monster Truck crown;

This car, racing in the 2WD class, is a modified pan car using the rear end of a Domina-



## SPORTSMANSHIP

### WINNING ISN'T EVERYTHING!

by DAN MOYNIHAN

HE LEADER IS streaking down the straightaway with the 2nd-place car right behind. Suddenly, without warning, a car two laps down enters the track from the infield right in front of the leaders! As a shower of broken parts covers the track and two cars are towed into the pits, a bloodcurdling #@\$&%\* erupts from the drivers' stand and two drivers come close to blows.

In another race, the leaders are coming up fast on a back marker, who is driving a smooth, but slow, line around the course. As the leaders approach, they slow ever so slightly, then blast past, still battling it out for 1st place, and the crowd goes wild! I don't know about you, but I'd much rather be in the second race. The main difference between these races is that in the second race, good sportsmanship and common sense were evident.

In fairness to the driver who was two laps down, it's possible that he didn't know about racing etiquette. I've read just about every magazine out there, and I have a hard time remembering what a driver should do in every racing situation, although much of it should be common sense. If you're involved in a crash, both you and the other driver lose time and laps, and it's costly if you have to replace destroyed parts. And let's face it, this isn't supposed to be the Demolition Derby.

As a manufacturer, I have a responsibility to see that R/C racing also rewards the sportsman. Not everyone has the equipment or the resources needed to be an A-Main champion, and the last time I



Left: Diane Rivers receives her Sportsmanship award from Dan Moynihan and Bob Hosch.

Below: Bud Bartos had a bad weekend at the TRC/Trinity Challenge, but his willingness to help the amateur drivers earned him a Sportsmanship trophy.

looked, this industry of ours was being supported by non-sponsored drivers! For the most part, manufacturers are concerned with who placed 1st, and the prizes and awards reflect this. Other drivers usually fail to get much recognition. That's why Dan's R/C Stuff has made a corporate commitment to reward the driver who exhibits the best sportsmanship, instead of the one who has the best motor and battery combination.

At the recent TRC/Trinity Challenge held at Lake Whippoorwill, I awarded two tro-



phies: The first was to Diane Rivers in the Non-Invitational Class. This was her first major event and, unfortunately, she had constant radio problems. During the races, she pulled off the track so that she wouldn't hinder the qualifying attempts of the other drivers. She and her husband tried everything, but the best she could qualify for was the M-Main in the 1/10 Stock Class. It was a tough weekend of racing, and Diane managed a 3rd-place

Good sportsmanship shouldn't be limited to the track. In the pits, I've seen many racers helping others with information and tips on how to go faster and drive better. The second trophy at the TRC/ Trinity Challenge went to an Invitational Class driver, Bud Bartos. Even though Bud is known as the "Legend of Lake Whippoorwill," this wasn't a good weekend for him. Bud's pits were very close to the tech area, and the technical inspectors frequently sent amateur racers to him for technical help. Bud never turned these racers away, even though their questions kept him from wrenching on his own car.

finish in her Main.

Racers who always fulfill their turnmarshalling duties and help sweep the track are also in the running for sportsmanship awards. I agree that winning is the reason for racing; I don't go out on the track to come in 2nd, but I do follow the example of the other racers, who try their best to run the cleanest race possible. If the "bad-luck bug" bites me, I try to laugh it off, and, as a result, I have a wonderful time at every event in which I race, and I spend a lot less time fixing broken parts.

Let's see if we can't expand this idea of rewarding the sportsman, as well as the 1st-, 2nd- and 3rd-place finishers of the main events. Then we can all be potential winners!



SPECIALIZING QUARTER SCALE



WCM KITS STARTING AT \$945.00

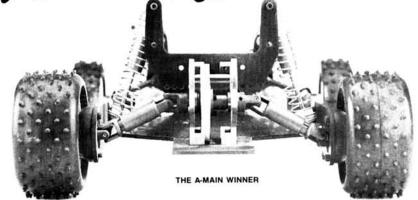
**CUSTOM BUILDING AND PAINTING AVAILABLE** (ASK FOR QUOTE)

HIGH PERFORMANCE PARTS INCLUDING SKELLENGER Q/C REARS

(516) 351-5384

63 HORTON DR., HUNTINGTON STA., NY 11746

# Bullet & JCNR a winning combination

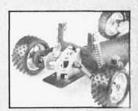




Graphite Comp. Kit **Graphite Chassis** Graphite Shock Towers **Graphite Trailing Arms** 



Trailing Arms The Perfect Match for J-car DDS Tranny Telescoping Axles



RC-10, JRX2 & Ultima Ballistic Speed **Bullet Proof Construction** Easy to Maintain

### Bullet

14435 Tomball Pkwy., Houston, TX 77086 (713) 444-2267 FAX. (713) 444-0438

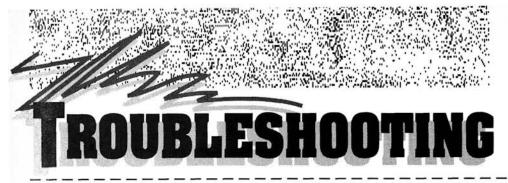
### J-Car

RC Custom Accessories & Design 52 Perkins Ave., Norwich, CT 06360 (203) 887-6476









by FRED MURPHY

### A VIDEO IS WORTH A THOUSAND WORDS



Lloyd Hemstreet asks if anyone has any last requests.

E ALL KNOW that racing an R/C car is fun and that it can even be educational, but building it is often *very* frustrating. We follow the manufacturer's instructions, but later find that there's a better way to do it. We might discover a short cut in the assembly process, a performance tip that now necessitates that we dismantle the car, or a simple tip that can prevent premature parts wear.

We rarely hear these hints from the manufacturer. Lack of knowledge, or lack of track testing? I don't know, but we've all encountered these frustrations at one time or another. It seems that the manufacturers want us to learn by trial and error so that they can sell us more replacement parts than we would have otherwise needed. This is understandable, but if you've just scraped together your last nickel to buy the R/C car of your dreams, it hurts when you find out that there's a better way to do things which, in the long run, would have saved you money.

I recently saw a video from the Milt Library, and it addresses this problem. Entitled "The R/C Car Companion," the video is available through Tower Hobbies\* and is designed for newcomers who might not yet have purchased a car. The

video gives information on Kyosho's products, from the entry-level Raider to the car-crushing Big Brute. In addition, well-known modeling instructor Bill Fries shows you a step-by-step construction of the Kyosho Raider, showing the tools, accessories and options that will enable you to successfully complete the car. He even shows you how to prepare a fully painted Lexan car body.

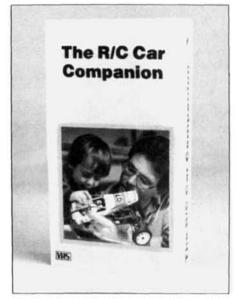
Mr. Fries successfully demonstrates all the finer points of assembling the shocks, the front suspension, the gearbox, the rear end, the wiring and the wheel and tire assemblies, and he describes the final adjustments your radio system might need.

Unfortunately, at that point in the video where Bill shows you how to adjust and test your radio system before running the car, there's a minor error. Even though the motor wires aren't connected, Bill shows that to turn on the car, you activate the receiver and then the transmitter. This *isn't* the way it should actually be done, because if your motor wires are accidentally engaged, and the speed control isn't in neutral when you turn on the power, it could be dangerous, both for you and your cars. Your turn-on routine should always be as follows: Turn on the

radio transmitter first (making sure the trim adjustments are in their proper positions), then turn on the receiver. Finally, plug in the battery pack and connect the motor, first making sure that the speed control is in neutral. This is a small technical error, but it's one that could cause a runaway R/C car and consequent damage.

Throughout the video, you'll also be treated to view *R/C Car Action's* Editor, Chris Chianelli, who gives the hottest tips for tuning and increasing the performance of your car, just at the point in construction when each should be done. His theatrical performance is a real show-stopper and prevents what could have been a very dry, rather slow construction video from falling into the basement.

With this entertaining video, the Milt Library gives beginners and experienced modelers some very useful information. This is the *must see* R/C car construction video of the year—educational *and* entertaining! I give it a 3<sup>1</sup>/<sub>2</sub>-car rating! Good luck, and happy motoring.



The R/C Companion is an entertaining tool for the beginner.

\*Here's the address of the company mentioned in this article:

Tower Hobbies, P.O. Box 4021 Champaign, IL





YOKOMO

by JOE BRUNI

HE CONFUSION IS finally over! The new Yokomo YZ-10 4WD ½10-scale off-road racer has finally found a "permanent" home in the United States with Team Associated\*. Imported from Team Yokomo, Japan, the YZ-10 is the successor to the once World Champion Yokomo SE Dogfighter. After several years of research and development, the YZ-10 comes totally re-engineered from the ground up.

THE KIT: The kit is packed in a sturdy box that sports a picture of the completed model on its front panel. In keeping with the Associated Electrics tradition, the car's components are meticulously packaged and numbered for easy organization and assembly. The new Yokomo offers a number of advanced, innovative features.

The nuclei of the car's mid-engine design are the lightweight, perfectly balanced graphite chassis and shock towers. There's a one-way clutch system featuring an adjustable slipper clutch, which is connected to the front and rear ball diffs via two strong, ribbed (non-slip) belts. Also included are a full bearing kit, four fully adjustable oil-dampened shocks, hardened-steel universal drive shafts, four super-traction low-



PHOTOS BY STEVE POND

profile spiked tires, an aerodynamic clear Lexan Protech body, a functional rear spoiler, a chassis undercover and a load of other secret goodies that complete the car's arsenal.

Before assembly, I chose to dye and color-coordinate all the YZ-10's nylon components. Most of the high-tech dream machines seem to be taking on a hot monochromatic look, so I felt compelled to keep up with this present full-scale vogue. I began by putting all the white nylon parts into an old kitchen pot. Using Litespeed's\* Dy-Lon dye powders (a mixture of yellow and red/orange) and boiling water, I began to "cook" the parts. Beware! You could learn the hard way, as I did: The front and rear bulkhead caps are made of a plastic blend, not a pure nylon, and the instant they hit the boiling water, they shrink and become unusable. So don't boil your bulkheads! By following the simple instructions that Litsepeed includes with its dyes, you can dye nylon a deep, rich color and strengthen these nylon parts as you color them. After letting the parts cool and dry, it's time to put the Yok' together.

ASSEMBLY: I suggest you read the entire assembly manual before starting construction. This will enable you to visualize the car's design and help minimize assembly mistakes. Since the first three steps are critical for superior performance, I'll discuss these steps in detail, then move swiftly through the rest of the car's assembly.

The manual begins with instructions for filing down certain areas of the chassis to accommodate the front and rear suspension systems and the batteries adequately. Using a wax pencil and a metric ruler, I followed the well-detailed photographs and illustrations and meticulously measured and sketched the areas to be filed. Then, using a flat metal file, I slowly filed along the penciled lines. Remember that the Yokomo's chassis is made of graphite, which is quite easy to file, so be sure not to over-file these areas, because if you do, you'll hamper the Yok's suspension performance.

The third step involves filing a shallow bevel on each side of the battery-mounting holes. At first, I was somewhat skeptical about this step, but it makes excellent sense: Depending on how much of a beveled edge you file, you can alter the car's center of gravity by having each

battery drop closer to the ground.

At this point, it's important to separate all the numbered bags in an orderly way. Whatever you choose to store the parts in during construction, remember to number each container to avoid confusion later. Steps 4 through 15 involve mounting the graphite backbone

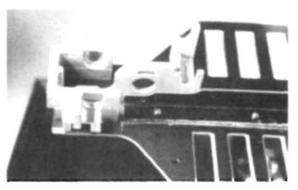
plate to the main chassis assembly. Again, it's important to sketch out the boundaries of the attachment site (with the wax pencil) before gluing in the backbone plate permanently.

When you've drawn a rough outline where the backbone will be mounted to the chassis, lightly sand both the area on the chassis and the side of the backbone that will touch the chassis plate. Sanding makes an excellent gluing surface for the graphite parts. To allow precise placement of the backbone, the instructions call for temporary attachment of the front and rear bulkhead components to the chassis.

Now put the backbone on the chassis plate and install the provided setscrew. Be sure to do these steps on a flat table to avoid bending the chassis while you're attaching the backbone. Making sure the screw is tightened firmly, remove the bulkheads and start putting a fine line of glue on the seam where the backbone and chassis plates join. The glue will seep under the backbone and make a tight bond. I suggest that you keep constant pressure on the entire backbone until the glue has set.

Next, following the illustration in Step 13, use a 5mm drill bit to drill four equidistant holes through both the backbone and the chassis plate. Countersink the four holes on the underside of the chassis so that the screws will be flush with the plate's surface. When you've installed the screws, put a small bead of glue on the nuts to prevent them from loosening.

The next few steps encompass the final attachment of the bulkheads to the chassis and don't need any special explanation. I agree with the manual that before going on to the diff assembly, you

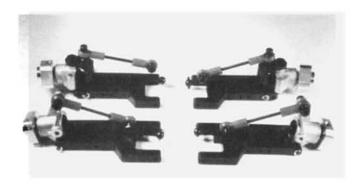


During assembly, the rear bulkhead is attached to the chassis to allow proper alignment of the chassis stiffener. Note that the beveled edges under the bulkhead allow more movement of the lower suspension arms.

should take a short refreshment break!

As already mentioned, the YZ-10 features unique, dual, ball-diff drive systems that incorporate an adjustable torque limiter that's directly connected with each diff by means of two tough belts. Begin with the center-shaft assembly. Following the illustration, line up the necessary parts on your worktable according to the order in which they are to be placed on the center shaft. Then, one by one, place the parts on the shaft, paying particular attention to the specific order of washers and ball bearings. At one point, you'll have to tighten the torque-limiter spring against the pressure plate. It isn't important to obtain precise tension at this point, because the car is designed to allow easy adjustments trackside. However, Step 25 requires a precise measurement of 39mm from bearing to bearing while mounted on the shaft. Any slight deviation at this particular step could alter performance. The most difficult task at this point in the assembly is choosing whether you want the car to be in full-time 4WD or part-time/ automatic 4WD.

The kit offers you the opportunity to individualize your car to suit your driving needs. Keep in mind that full-time 4WD is best for slippery track conditions and for those who prefer less responsive steering. Likewise, the part-time/automatic setup should be considered for high-speed tracks and quick steering response. I chose the part-time/automatic system for my test car, because my local track is a high-speed course and has many challenging tight corners. When you've made your decision, simply place the direct-drive hub in either of the two positions shown in the manual's illustrations, and finalize assem-



The front and rear suspension components include universal joint, drive shafts and adjustable upper links.



The heart of the Yokomo's drive system is the center slipper clutch and the front and rear ball differentials. These are connected with a very efficient belt.

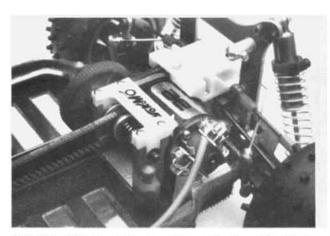
bly by putting the large E-clip into place.

The next 20 steps entail ball-diff assembly and installation to the front and rear bulkheads. At this point, the manual is extremely well detailed, except in Steps 41 and 42. The manual says that you should tighten the adjustable diff-head screw all the way to a locked position then back out 45 degrees (one-eighth of a turn). Remember, you can quickly make future trackside adjustments owing to the advanced, ingenious Yokomo design. Be sure to apply diff lube during assembly. The manual is very explicit and gives illustrations and written step-by-step guidance for the rest of the diff assembly.

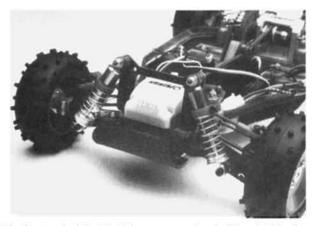
When both diffs are in place, it's time to secure both systems under the bulkhead caps. If the belts seem too loose, don't worry, because the next few steps require that you assemble the belt tensioner/pulley system. There's a photographic error in the manual, because it shows the harness hanger and the tension arm on the same side (the motor side) of the backbone plate. Putting them on the same side will cause the tensioner pulley to pull the long belt out of proper alignment and may cause excessive belt wear, as well as poor performance. Simply put the harness hanger on the opposite side of the backbone plate, and-presto!-a perfect belt alignment.

The manual cruises through suspension and drive-shaft assembly. The Yokomo stock shocks have raised quite a controversy at my local track: Some Yok' owners say they're worth their weight in gold, while others have already replaced them with Associated\* RC10 shocks. In my opinion, if assembled properly, these shocks are winners! The trick is to pour just the right amount of shock oil into the pressurized chamber, remove all the air bubbles before capping, and-and this is most important-bleed the shocks slowly.

When the shocks are mounted, it's time to install the motor and the radio gear, and then you paint the clear Lexan body. I have no doubt that anyone who's considering buying the new Yokomo is seeking to acquire the ultimate lethal weapon, so why not couple the car's advanced design with the latest high-tech radio, battery and motor components. With that premise in mind, I decided to use the new Team Associated Reedy Gold Star modified motor, a Team Associated Reedy SCE power pack, the new Futaba\* Junior FP-2PBKA pistol-grip radio system and-the icing on the cake!-the new Tekin\* TERX AM micro receiver/Tekin PXT ESC 600 Pro Tempfet speedcontroller combo. The entire ensemble fit precisely onto the graphite chassis after I'd cut the mounting ears off the Futaba's FP-S148 servo



This shot of the complete rear-end assembly shows the slipper clutch in place. Note that the white, plastic caps for the bulk-heads cannot be dyed; if they are, they'll shrink.



The front end of the YZ-10 has a magnesium bulkhead. This alloy is very light, but it often breaks when it takes a hard hit.



so that it could fit inside the Lexan undercover. (The undercover envelopes the entire undercarriage as well as the sides of the Yokomo chassis.)

With the Velcro strips on the inside panels of the body and the adjacent Lexan undercover, the car is virtually sealed against debris. The Yokomo's pin-spiked rubber tires have to be glued onto its one-piece aero-dish wheels. After preparation, trimming and painting of the Yok's bod and rear spoiler, it's time to beat the dirt.

PERFORMANCE: I've tested and raced many fine R/C machines over the past few years, but none was as exciting to run as the new Yokomo. After peaking the super Reedy\* 7-cell SCE Team pack, I was set for action.

In an attempt to compare the Yokomo fairly with previous test cars, I chose my gold-standard, local, off-road track for this report. I arrived early to avoid a big crowd, put the car on the track, and took my place on the 10-foot-high drivers' stand. The track has both an oval course and a roadcourse. Since there was to be a roadcourse race that afternoon, the oval course was blocked off in certain areas.

My first run was slow so that I could fine-tune the steering; the second run was for the money, so as soon as I rounded the front turn, I nailed the Futaba's trigger and the car went ape. There was a 3-inch-high

dirt rooster-tail from all four tires, and the Yok' shot down the front straight with incredible acceleration. As I entered the first hairpin turn, I let off the throttle slightly, the car sucked into the turn, and I again buried the throttle. Unfortunately, the rear end seemed to be a little loose, as it would slide out going around the turns, so I rolled into the pits. Using the included Allen wrench, I tightened the front diff and let off on the rear diff a little to bias the power toward the front end and give the rear more traction. With the diffs adjusted in this manner, the car will understeer slightly, but it will be considerably more predictable in the turns.

Within a few minutes, I was back on the track. What a difference! The car handled so much better going into and out of the turns. I continued to torture the car on the track: It ate up the turns, but had some problems landing from high jumps without bottoming out again, so it was back to the pits for an attitude adjustment to the rear shocks. I increased the tension, and this seemed to do the trick.

As I was about to return to the track, it started to rain, and I was stuck with a peaked battery and mud, so I decided to hop over to the new indoor oval off-road track at Bellmore Raceway in Bellmore, NY. The track is slightly over 200 feet long and is the ideal combination of

(Continued on page 134)

### YOKOMO

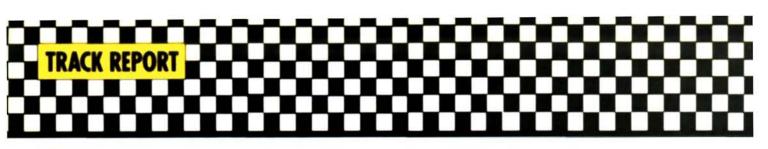
### YZ-10

Type         4WD off-road           Scale         1/10           Sug. Retail Price         \$399
DIMENSIONS: Overall Length 14.5 inches Width 9 inches Height 4.5 inches Wheelbase 10.75 inches Front Track 7.88 inches Rear Track 8 inches
WEIGHT: Gross (w/bat.)3 pounds, 14 ounces
BODY: TypeOff-road buggy MaterialLexan
CHASSIS: Type
DRIVE TRAIN: PrimaryPinion/spur with slipper clutch TransmissionBelt drive DifferentialsBall diff (f/r) BearingsBall bearings
SUSPENSION: Front: TypeLower A-arm/upper control link DampeningOil-filled, coil-over
DampeningOil-filled, coil-over shocks
Rear: Type Lower A-arm/upper control
link w/anti-roll bar DampeningOil-filled, coil-over shocks
WHEELS: Front: Type
Rear: TypeOne-piece nylon Dimensions (DxW)2.125x1.25 inches
TIRES: Front/rearRubber spiked
ELECTRICS: Motor05/540 (not included) Battery Req'd6- or 7-cell saddle pack (not included)
Speed Controller Electric (not included)
OPTIONS AS TESTED:  Reedy Modified motor and 7-cell SCE battery pack; Tekin PXT PRO Tempfet electronic speed control and TERX AM micro receiver:

Reedy Modified motor and 7-cell SCE battery pack; Tekin PXT PRO Tempfet electronic speed control and TERX AM micro receiver; Futaba Magnum Jr. FP-2PBKA pistol-grip radio.

### COMMENTS:

A true contender for the serious off-road 4WD enthusiast. Owing to the lack of frontend protection, the front bumper needs to be improved. There are some minor flaws in the instruction manual regarding photographic errors. Don't attempt to dye the bulkheads: They'll shrink!



# KO PANIHEK 12

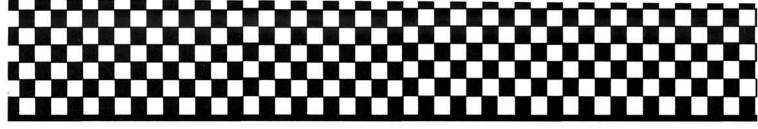
**NE FOR THE ROAD!** 

HEN IT COMES to pure speed and excitement, there's nothing quite like a road-racing machine. Punch the throttle and you have instant speed. With the proper setup, you get cornering that will make your head spin. When the need for speed hits you, it's just what the doctor ordered. Of all the road-racing cars out there, there's

little doubt that 1/12-scale cars offer the most performance for the bucks. These small-time rockets are simple and terrifically fast. With minimum investment, a 1/12-scale car provides you with the best sporting excitement in on-road cars. The latest 1/12-scale offering in road cars from Parma International\* is the Pro Panther 12.

Parma has been around the racing scene since before the heavy days of slot cars in the '60s, which means that what they have to offer should be a product worthy of attention. The Pro Panther 12 should make the grade. It's a fiberglass pan-chassis road car with a ball differential, a fiberglass beam front axle, a T-bar rear end, a





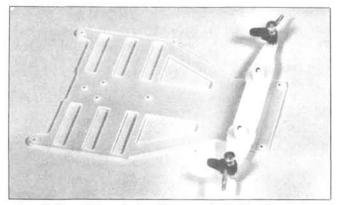
friction rear-suspension plate and an all-metal motor pod. Ball bearings for all axles, a graphite rear axle and a full set of racing rubber are all included. Sounds nice; now, let's take a look.

ASSEMBLY: The assembly of the Pro Panther isn't difficult, but it will take some serious thinking, because the instructions leave a lot to be desired. Of all the pictures in the instructions, only three display the parts in an exploded view; the rest are fully assembled components. There are no close-up detail shots for good visual reference. The written portions aren't quite explicit enough for the average or inexperienced modeler to make sense of, and this leaves a lot of guesswork and trial-and-error situations. But onward I forged, and I hit the front end first.

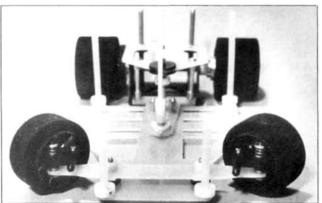
The front end is a fiberglass beam axle with the wheel kingpins inserted on the outer edges. The mounts are flanged spacers that are slip-fit into the axle beam and then bolted down. There are no supports for the top of the kingpins. The steering blocks are mounted on the kingpins and secured in place with E-clips at the top of the kingpin, while small suspension springs provide the front suspension system. Only one set of springs is provided in the kit. When this is all done, the axle beam, with kingpins and steering blocks attached, is mounted to the main chassis.

Front-end caster is controlled with kit-supplied caster wedges. Simply place these under the axle-beam mounts, and kick the beam back as needed. Several sets of caster wedges are supplied in the kit, making for good versatility.

At the rear end, I worked on the motor-pod assembly. This sheet-metal unit, bent to shape at the factory, allows the mounting of the motor, the rear axle, the wing tubes and the T-bar. Again, the instructions do you little service, so you're in for some more trial-and-error fitting. It took me some time to figure out how to mount the ball sockets for the T-bar. This portion of the assembly is quite critical: The ball sockets must allow absolutely free movement of the ball within, and they must be carefully tightened to ensure a uniform fit. If this doesn't happen, you won't have consistent handling. Take your time here, as the rewards will be the difference between winning and trashing the car.



Overall view of the main chassis pan on the Pro Panther 12 shows a rather simple fiberglass chassis with a fiberglass axle beam. The axle beam can be adjusted for caster with the kit-supplied wedges.



The front end is swung open to show the springs and fiberglass axle beam. Front suspension is a good working unit.

The rear suspension depends on a couple of items. First is the aforementioned ball sockets that allow free side-to-side movement of the rear pod when it's under stress. Second, there's a friction-plate dampener that controls and dampens the fore-and-aft motion of the chassis. It's similar to another dampener plate used by another car, but this unit uses two dampener washers made from a very slick plastic to reduce total force friction. The effect is that you can use light oils of various weights to adjust the amount of dampening derived from the plate—a neat idea.

The T-bar and rear pod isn't mounted to the main chassis on the pivot balls from the bottom of the chassis. The forward bolt carries nothing, and the rear bolt has the dampener post mounted on top of it. Just ahead of the rear ball socket are two 4/40 screws that come up from the main chassis and through the T-bar. On these, you'll place a short length of silicone tubing, and then cap it with a 4/40 nut. This is the tweak adjustment and roll controller for the rear end, yet there's no mention of this item in the instructions! This is a *very* important suspension component, and without it, your car won't handle to save its little life.

The next assembly is the rear axle. The ball-type differential axle is typical of those found on most road cars. A 48-tooth main spur gear is supplied in the kit, in 32-pitch size. As most of my garage is filled with 64-pitch gears, I traded the spur gears for an equal-size 64-pitch gear. There was nothing wrong with 32-pitch gears; it's just personal preference, and I recommend using the gear that came with the car unless you have some other pitch size you simply can't live without. Nylon spacers provide the necessary spacing for the rear hubs to reach final width of the tires. The rear axle is supported by precision ball bearings on both sides of the motor pod. The axle ride height is not adjustable. At the front, the wheels are also bearing supported, and this finishes out the car.

The motor used for this review was the Parma K-Stock motor. Approved for ROAR stock classes, this Kyosho-based can motor has silver-plated springs and a modular end bell. This motor arrived a bit on the tight side, and some major break-in was required, but when that was done, the motor was quite happy.

The body that graced my Pro Panther is the new Oldsmobile stocker from Parma. Although the body is made to meet NAS-

### PARMA INTERNATIONAL

### **PRO PANTHER 12**

Type	On-road car
Scale	On-road car \12
Sug. Retail Price	\$145

### **DIMENSIONS:**

Overall Length	9.3 inches
Width	
Height3.0	inches at wing posts
Wheelbase	7.5 inches
Track (f/r)	6.5 inches

### **WEIGHT:**

Gross	(w	/bat.)	32	ounces
-------	----	--------	----	--------

### **BODY:**

Type		Parma Olds N	<b>ASCAR</b>
Mater	rial		Lexan

### **CHASSIS:**

Type		 		Fla	t pan
Mater	ial .	 	G-10	Fiber	glass

### **DRIVE TRAIN:**

Primary	Pinion/spur
Transmission	Direct-drive
Differential	Single, ball-type
Bearings	Ball bearings

### SUSPENSION:

Front:	Type	Single spring
	Dampening	None
Rear:	Type	"T" bar flex
	Dampening	Friction pressure
		plate

### WHEELS:

Front:	Dimensions (DxW)	
Dogr	Туре	inches
Reui.	Dimensions (DxW)	1.37x1.37

### TIRES:

	-	-	-
Front	R.	Rear	 Loam

### **ELECTRICS:**

Motor	Parma K-Stock
Battery	6-cell saddle (not included)
Speed	Controller Electric (not included)

### **OPTIONS AS TESTED:**

Kyosho 500 speed controller, JR Winner wheel radio, Sanyo SCE battery.

### **COMMENTS:**

For sport-minded racers looking for a 1/12-scale car, the Pro Panther 12 is a good candidate. It handles well and shouldn't need much maintenance. The builder must be experienced, as the instructions are poor. The rear axle can't be adjusted for ride height, and this limits the adjustability of the car.

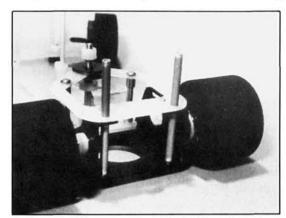
CAR requirements in <sup>1</sup>/<sub>12</sub>-scale, it looks just as nice painted as the current Trans-Am Olds contender that's cutting apart the competition on the road circuits. Good detailing is apparent here, and the aerodynamics of the body should lend itself well to road racing when raced against other Trans-Am or NASCAR bodies.

With a 6-cell battery on board and all the electronics mounted, the car weighs in at 33 ounces. This is only two ounces over the minimum, no doubt owing to the metal rear-pod assembly and the stock-car body, but this won't hurt you much, especially if fun is the name of the game. With the body mounted and the battery

charged, I headed off to the test track.

PERFORMANCE: Tweaking in the Pro Panther is no sweat; just use the tweak nuts to set the rear Tbar, and off you go. Sure enough, the Panther turns left and right equally well when adjusted properly. Check the diff and the springs, then give the Panther the juice.

I have to admit that the Pro Panther handles a lot better than I thought it would. The kit-supplied tires handled well when tire-dressing compound

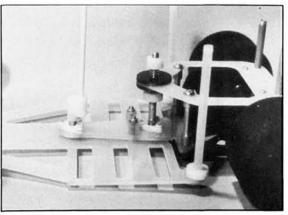


A close-up of the rear end reveals the formed-aluminum motor-pod section. While it does serve to dissipate heat from the motor, the unit doesn't allow for rear-axle adjustment.

was applied, providing a lot of bite to the chassis. On the oval track, the Pro Panther had no problem whatsoever taking the high-banked turns at full bore. There's no backing off, just hold on to full throttle. Because the oval was somewhat anticlimactic, I took to the roadcourse portion of the track.

The paved raceway of E&L Raceway in Del Mar, CA, provided a perfect testing ground for the Panther, a tight and twisty track that shows no mercy for ill-handling cars. The Panther took very well to this track, although I must admit that the addition of a rear wing made handling a whole lot better. The Olds body handles quite well for a stocker body. I might have to stay with that one!

Overall, I was impressed with the "driveability" of the Parma Pro Panther 12. Owing to the rather heavy rear pod and non-adjustable rear axle, I don't consider the Panther an all-out driving machine for serious competitors; however, for the sport-minded driver who races on the local level, this is a good car. Maintenance should be very low and easy, while providing a trouble-free car that runs consis-



This view of the chassis center section shows the frictionplate dampener and T-bar arrangement. The dampener uses a plastic-and-foam washer on top and bottom for dampening action on the plate.

tently. The Parma K-Stock motor runs well, making it a good choice for stock-class racing. While the instructions leave much to be desired for the builder, the modest overall price of this car and its handling make it a good investment. For those who like speed in the fast lane, Parma has a nice little road-runner.

\*Here's the address of the company featured in this article: Parma International, 13927 Progress Parkway, North Royalton, OH 44133.

### LONGER LEANER

### TRACK REPORT



### by BOB GAGNE

HIS IS ONE of the most unbiased track reports that there could ever be. Before I received the Kyosho\* Ultima Pro for evaluation, I had raced against Ultima Turbos and plain old Ultimas in several configurations, but I never gave any of them a second look. I must say, now I'm impressed.

THE KIT: The kit is impressive. Neatly packaged with blister packs, numbered bags and illustrated partiare more substantial than the similari-

This kit comes with a flat graphite chassis that has cutouts that will accommodate saddle-pack batteries to lower the center of gravity. It also has adjustable tie rods to facilitate toe-in and camber tuning. The Gold shocks included seem to be the choice of most Ultima drivers. In short, this kit includes all the high-priced hop-up



tions, you can't help but think that this is a well-thought-out kit. At first, you might think that this is just a dressedup version of the Ultima Turbo; after all, the body is the same, and the wheels are similar; but the differences

The Pro is longer and lighter than the Turbo. The extra length means increased stability over rough ground, and the lower weight means more speed and longer running times. The Pro I assembled is lighter (52 ounces)

than the advertised 52.9 ounces. The difference can be accounted for by my lighter-than-usual radio gear: The Novak\* NESC-T4 weighs 1.55 ounces, and the NER-2 receiver weighs .50 ounce. As well as these weight savings, I used a Futaba\* S-132H mini servo. This setup is lighter than a system that uses a fullsize receiver, two standard-size servos and a mechanical speed controller, but since ROAR's weight minimum is 52 ounces, we only just made it.

ASSEMBLY: Kyosho's instructions are among the best in the industry; they use line drawings with scale illustrations of the hardware used in each step. This makes identifying the parts very easy, even for novice modelers. There's also a complete list of the parts that should be found in each of the numbered parts bags. The list is up front, where it belongs, i.e., before the assembly information.

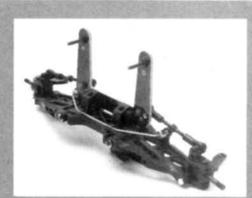
The last page gives you some tips on how some basic suspension adjustments affect handling. It also includes a chart that gives the relative changes in handling using different types of shock-absorber pistons and shock-oil viscosities.

The assembly is divided into the construction of sections of the car, e.g., the first few steps deal with shock absorbers; the next steps are the assembly of all the rods, then the transmission, then the rear suspension system. Each new section is presented logically as the car is assembled. There's very little text, but it's very helpful. One of the hints given in the instructions is the use of "screw cement," or thread-locking compound. This should always be used when you have a metal-tometal fit, to prevent vibration from loosening parts. Kyosho doesn't assume you'll run out to buy threadlock if you don't have it; they give you a generous tube. Bravo, Kyosho!

When the suspension parts have

been completed and bolted to the chassis, the radio plate is assembled and secured. All the chassis and suspension assemblies are first-rate, but a couple of small additions would make this kit even better. One of them concerns the center rod that connects the two servo-saver arms. This is a bent-wire affair that should have been ball ends with a turnbuckle-type threaded rod, because this would have made toe-in adjustments infinitely easier. With the turnbuckle setup, both front wheels could be adjusted equally by turning the center rod. Also, Kyosho uses a ball end on the servo-saver end of the steering rod that goes between the servo-saver and the servo arm, but uses a bent-wire system to attach to the servo arm. Again, the use of a second ball end and a turnbuckle rod would make fine-tuning the wheel alignment and servo centering easier. Rather than having to take the servo arm off the servo and then crank the steering rod in or out, the turnbuckle could be turned without disassembling anything. Perhaps this is nit-picking, but I think that a world-class car at this price (\$259.95, suggested retail, without a motor or any other electrics) should eliminate as many sources of problems as possible. In my experience, a bent wire through a plastic arm soon wears to the point of being very sloppy, and steering is one area where you don't want any slop.

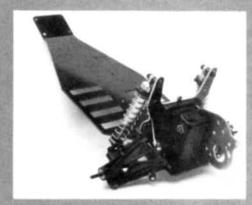
The last step before you install the radio gear is to finish the transmission assembly. Although the Pro's transmission works very well and has a very smooth diff, the center gear is available in only one tooth number, and this might limit the Pro's applications. Also, the diff is adjusted through the left diff shaft with an Allen wrench, and to do this, you must disassemble the upper control arm to get to the diff shaft. It can be time-consuming to make diff adjustments and a pain if your



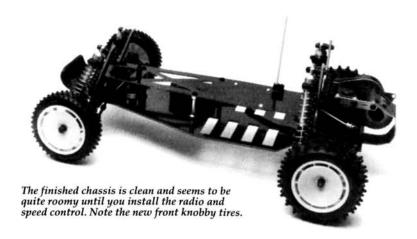
Before the shocks are added, the front-suspension assembly shows the three upper control-rod holes, three shock-angle holes in the lower A-arms, and the two ride-height holes in the shock towers. Note also the turnbuckle control arms and the heavyduty sway bar.



The ball diff comes completely assembled; all it needs is to be installed into the transmission case and adjusted. It's very smooth, but all adjustments must be made through the left diff shaft, and this can take some time.



The first completed section is the rear suspension and transmission case. To accept a 6- or 7-cell saddle pack, the chassis has seven cutouts (four on the left, three on the right).



diff starts to slip just before the A-Main. Even though the ball diff comes assembled, the instructions do include an exploded view of the assembly so that you can put it back together after you've disassembled it to clean and lube it.

PERFORMANCE: Very fast! When the car was assembled, I headed for the local hobby shop to find just the right powerplant. I picked out a new Kyosho Super Stock 34 Degree motor, which made the Pro fly down the straights but kept it controllable through the turns.

The test track is a real challenge with a 30-yard straight and two back-to-back hairpins. The car handled predictably with a little oversteer. A few adjustments to the shocks, and I

had the car sticking like glue to the track, but the real test would be the club's "torture track" during the weekend competition.

This track is only a short oval, but it's full of moguls, dipsy-dos, bumps, rocks, and—even worse—it's hard-packed dirt with a light covering of dust that makes things very slippery in the turns. If a car can handle this track, it can handle anything from back yards to world championships.

The Ultima was up to the challenge! I won both of my qualifying heats and wound up as top qualifier for the A-Main, which was identical to the qualifying heats with several different makes of cars qualifying for it from their heats. The car has lived up to its name: After a string of five

consecutive 2ndplace A-Main finishes, it brought me a 1st-place finish. Am I impressed? Is there anyone out there who'd like to buy a slightly used 2nd-place car?

\*Here are the addresses of the companies mentioned in this article: Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL, 61820. Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707. Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718



The superlight radio gear consists of a Novak NESC-T4 electronic speed control and a Novak NER-2 receiver. Their small size and light weight fit the Pro perfectly.

### **KYOSHO**

### **ULTIMA PRO**

Type2WD Off-road
Type         2WD Off-road           Scale         1/10           Sug. Retail Price         \$259.95
DIMENSIONS:
Overall Length14.4 inches
Width9.5 inches
Height5.1 inches
Wheelbase10.4 inches
Front Track7.7 inches
Rear Track8.1 inches
WEIGHT:
Gross (w/bat.)
BODY:
TypeOff-road buggy
MaterialLexan
CHASSIS: TypeFlat pan
lypeFlat pan
MaterialGraphite
DRIVE TRAIN:
Primary
TransmissionGear drive
DifferentialBall diff
Bearings Ball bearings
SUSPENSION: Type (f/r)Lower A-arm/upper
Type (f/r)Lower A-arm/upper
control link
control link  Dampening (f/r)Aluminum oil-filled,
coil-over shocks
WHEELS:
Front: Type
Dimensions (DxW) 2.1x.815
inches
Rear: TypePlastic one-piece Dimensions (DxW)2.1x1.355
Dimensions (DxW) 2.1x1.355
inches
TIRES:
Front/RearLow-profile pin-spike
ELECTRICS:
Motor
Battery 6-cell stick pack or 6- or 7-cell
saddle pack (not included)
Speed Controller Electronic (not
included)

### **OPTIONS AS TESTED:**

Novak NESC-T4 speed control and NER-2X receiver; Futaba Magnum Jr. transmitter; Kyosho 34 Super Stock motor.

### COMMENTS:

The Ultima Pro is longer and lighter than the Ultima Turbo version, and it also features a stiffer graphite chassis with cutouts for saddle-pack batteries to get the weight as low as possible in the car. Although many parts for the Ultima and Turbo Ultima fit the Pro, there's no need to add any parts to this car. With the addition of the electrics, this is a competitive racer as soon as it's assembled.

### OVAL BURNS

posts. The body was then painted and trimmed with Parma\* 1/4-scale decals. After that, I just had to adjust the suspension for oval racing, and this meant preloading the right front and left rear shocks; simple enough?

I had no doubts that the Burns would be a stout performer, and test runs confirmed my opinion. With higher compression and smoothed fuel-transfer ports in the new EX-B, it's a stump puller. Acceleration is incredibly strong and, as long as the fuel is mixed correctly, the top end is equally impressive.

By experimenting with different Dura-Trax\* and Kyosho tire compounds and tread patterns, I was able to tune the Burns to the track more effectively. While the track I run on is too short to lean into the throttle all the way through a turn, a little braking before I powered into turns produced a controlled power slide.

I had a problem with excessive flexing in the hood area. This was caused by the extra-large wheel openings that are needed to give adequate clearance to the Burns tires. Some additional support for the front of the body is required, especially if you want to nerf the car in front of you!

Expect some awesome action from this nitro-burner! While this project doesn't give you the definitive low-down on how to set up your Burns for oval action, it might encourage those of you who are looking for a change of pace with your 1/8-scale off-roaders.

\*Here are the addresses of the companies mentioned in this article:

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820. O.S.; distributed by Great Planes Model Distribu-

MRP, 18676 142nd Ave. NE, Woodinville, WA

Du-Bro Products, 480 Bonner Rd., Wauconda, IL

Parma International Inc., 13927 Progress Pkwy., North Royalton, OH 44133.

DuraTrax; distributed by Great Planes Model Distributors.

(Continued from page 32)

ing, and smooth, drag-link/pivot-arm setup. The radio system I chose for the Dominator is the trusty Futaba\* Magnum Jr. with a Novak\* NESC T-1X for the ultimate in transferring the power to the Dymond\* Gold 14-turn modified motor.

Custom Works' new Oval-Pro tires are stock equipment on the Dominator and feature a one-direction spike pattern that's specifically designed for oval racing, as the name suggests. Before mounting them on the wheels, drill a few 1/16-inch (or smaller) holes in each wheel to allow some of the air to escape and to avoid tire bounce. When the holes have been drilled, clean the surfaces of the wheels and tires (the areas that will be glued) with an alcohol-based solvent, then glue the tires onto the wheels, following the method given in the instructions. To quote the manual: "If you don't clean the wheels and tires before gluing, they will come unglued, (and so may you!)." Gluing is very important, as I found out. I decided not to glue the tires before the photo shoot, because I didn't want to get any CA on the outside of the tires. I figured that they'd hold out just for the shoot, but was I wrong! They slid off the rims with each sweep though the turns, so glue them on!!

And now for the paint job: Bill Henning, of Henning Scale Models in Lansdale, PA, has truly created a masterpiece. I gave him free rein on this body, and he came up with a gorgeous tropical island motif. The decals on it are the

(Continued on page 108)



### SIDE-DAM TECHNOLOGY

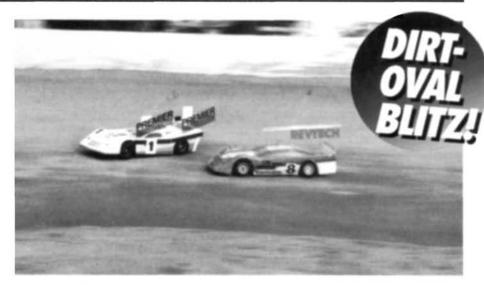
### MORE THAN A BILLBOARD

by WALLY DAVID

HEN YOU SEE a full-bodied car sliding around a dirt-oval track, you might wonder why there is a big piece of Lexan on the side. It's a lot more than just a manufacturer's billboard, that's for sure!

That piece of Lexan is called a side dam, and it's a vital weapon in your arsenal when it comes to the war between you and the track. If you think that you just take a sheet of Lexan and slap it on the side of your car, you're sadly mistaken. You'll notice an effect on the handling characteristics of the car, but unless you know the basics of side-dam theory, it will be a hit-and-mostly-miss process.

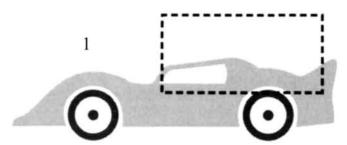
Although I have a fair bit of experience in dirt-oval racing, I didn't really have a full grasp of the subject, so I called Custom Works\*, the company that makes the Dominator, and talked with Jerry Land-



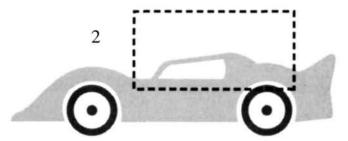
graff. Since his cars are raced with full wedge bodies and side dams, he proved to be a very knowledgeable source.

Basically, the theory is that the closer the leading edge (front) of the side dam is to the front wheel, the more steering or turning effect your car will have. So, if you're racing on a long track with wide, sweeping turns and the wing is too far forward, the car will spin out. Conversely, if the track is short with tight turns, you'll need all the help you can get from the side dam, and this means moving it forward. At first, it's hard to say exactly where to put the side dam, but it's best to start by locating the leading edge roughly halfway between the front and rear wheels. At this point, don't worry about the length of the side dam, or how far it hangs off

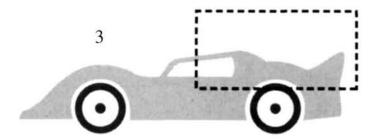
(Continued on page 144)



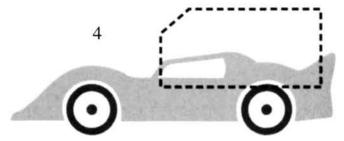
The dotted line represents the Lexan side dam in a neutral position



Here, the side dam is moved forward of the center line of the body, which will give more steering.



In this illustration, the side dam is moved back for less steering.

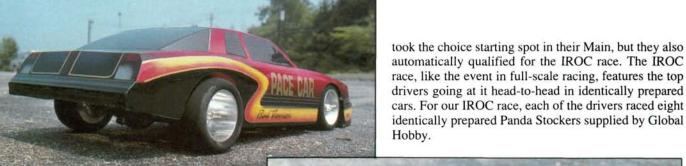


The leading edge of the side dam has been trimmed back. This has the same result as moving the side dam back.

by STEVE POND

# PROJECT PANDA BUILDING THE IROC PACE CAR





N THE JUNE '89 issue of *Car Action*, we featured a race called *Car Action*'s Calfornia Oval. In conjunction with NORRCA, Global Hobby Distributors\*, and RG Canning (the promoter of the full-scale auto show where this race took place), *R/C Car Action* sponsored a race similar to other popular on-road racing events that are popping up around the country, but there was an interesting twist: The top qualifiers in each of the classes not only

The Panda Stocker, as well as the rest of the Panda line, is targeted at the beginner. The cars are rugged and very inexpensive, and beginners won't be overwhelmed by maintenance and tuning chores while trying to polish their driving skills. (See the Track Report on the Panda Stocker by Wally David in the August '89 issue of *Car Action*.) For the IROC race, the Panda Stockers were

The shock mounts in the rear of the Panda were strong enough to weather the higher stress caused by the oil shocks, but the front shock mounts demonstrated considerable flexing. This flexing caused the front end to bounce excessively, and this resulted in poor steering. To remedy this, a section of brass tubing was placed between the two screws that fasten the shock mounts to the chassis. This is a

very simple operation that results in improved steering response. To further aid traction, a set of foam tires was used, rather than the rubber ones that come with the car. The eight cars used in the race were fitted with pretrued foam tires mounted on lightweight one-piece wheels available from TRC\*. The pace car shown in the photograph was fitted with a set of pre-trued foams and aluminumwheels and adaptersfrom Racing Scale Sport\*.

Modifying the electrics further boosted the performance. The stock speed controller was replaced by a KO Propo\* CX-II electronic

speed control that provided very smooth acceleration and brak-

ing, which are ideal for racing. For a little boost in power the stock Mabuchi motors were all replaced with ROAR stock-class motors provided by Twister\*. Each of the cars used a KO Propo EX-7radio system, which is the most economical version of the KO line.

These few relatively inexpensive, modifications won't put you up there with the specialist



The Panda Pace Car used pre-trued foam tires mounted on aluminum rims and wheel adapters from Racing Scale Sport.

on-road racers, but if you'd like to see your Panda take a good chunk out of lap times, or simply reach the end of the driveway faster, these modifications are ideal.

\*Here are the address of the companies mentioned in this article:

Global Hobby Distributors, 10725 Ellis Ave., Fountain Valley, CA 92728.

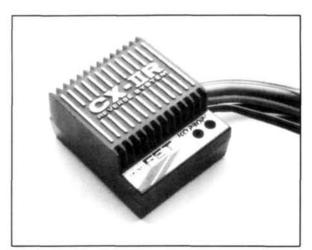
Associated Electrics, 3585 Cadillac Ave., Marina Del Rey, CA 90292.

Kyosho, distributed by Great Planes Distributors, P.O. Box 4021, Champaign, IL 61820. TRC, P.O. Box 1058, 2211 Charter St., Albemarle,

TRC, P.O. Box 1058, 2211 Charter St., Albemarle, NC 28001.

Racing Scale Sport, 63 Bluejay, Irvine, CA 92714. KO Propo; distributed by Global Hobby Distributors.

Twister Motors, 657 E. Arrow Hwy., Suite H, Glendora, CA 91740.

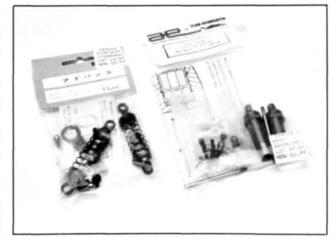


The stock speed controller was replaced with KO Propo CX-IIR electronic speed controls on the IROC Pandas.

modified so that they could handle the asphalt course more effectively.

The modifications, modest though they were, made a substantial improvement in performance. They won't make the Pandas competitive with the pan cars, but, just as modelers do in every class and at every skill level, the organizers of the race allowed modifications to make the cars more consistent and predictable.

Suspension received the most attention, with the stock spring-dampened shocks being replaced by oil-dampened units. In the rear, a pair of Associated\* short shocks was used and, owing to the limited space available on the front end, a pair of smaller Kyosho\* red shocks was used.



For better handling, Project Panda used Kyosho red oil-filled shocks up front and Associated 1.02-inch rear shocks.



HOSE WHO HAVE never raced dirt oval may think that because the cars are running on dirt, they're the same as off-road cars, only they just turn left. If you have raced dirt oval, you know that, despite the slight similarities in the surfaces the cars run on, a competitive dirtoval machine is a completely different breed. While some of the chassis used in dirt oval are the same as those used for off-road racing, the set-up techniques are worlds apart.

The polarization of the dirt oval and off-road cars doesn't end at the suspension and chassis, either. Motor choice also plays an important role for the competitive oval racer. The motors that are considered the hottest for the off-road tracks would most likely be too mild for a dirt oval, and, conversely, motors that are used for today's dirt oval would leave you in dump city after only 2 minutes or so in an off-road car. So, which motor should you choose? To help you make a wise choice, I consulted Neil McCurdy of Revtech\*, a motor manufacturer that has done very

### AN EXPERT OPINION

well in oval racing. Just as with any other form of electric R/C racing, there are a number of variables that must be considered when choosing a motor, and I'll touch on some of the major ones that might persuade you to spend your R/C bucks where they're going to do the most good.

The Cars: Fortunately, whether you're driving a 2WD or 4WD car, there isn't much difference in the motors that would be competitive on a given track (give or take a turn), provided your two-wheel car is set up properly. If you aren't so confident in your chassis-tuning abilities with

by STEVE POND

the two-wheelers, it might be wise to go with a milder motor. For the top-notch cars that have a very efficient drive train, motors in the 12- to 14-turn range are the most popular. Cars that would be considered candidates for these types of motors include the Dominator and other similar four-wheelers, and the RC10, the Ultima, or the JR-X2 for the 2WD class. These top-notch cars can make the best use of the horsepower put out by these mills. For the less expensive cars raced at the local level, the aforementioned motors might be too hard on the drive train. Try them if you want, but you might find that it could be too much for the transmission. If you want to play it safe, a 17- to 19-turn motor might be a good choice.

The Track: Regardless of what type of car you're running, the track plays a major role in determining the "ideal" motor. For larger tracks, where you can hold the car in a turn without having to back off the throttle too much, a motor with a higher number of turns would be

(Continued on page 172)

### DOMINATOR

(Continued from page 98)

Custom Works, Dominator, Novak, Radio Control Car Action and Autographics\* logos and a numeral. The rest of it was done with an airbrush (Bill's first attempt at airbrushing). I like this one so much that it will never be raced!

PERFORMANCE: Simply awesome! I can't begin to describe the feeling of sheer speed and control that the Dominator gave me when I cranked it up at a local dirt oval. The Dymond Gold Series modified motor provided plenty of horsepower for this oval-course assassin. I could drive it hard into the corners and really mash the throttle coming out (which is where 4WD really has the advantage over 2WD), where the Dominator would simply explode down the straightaway.

Never having driven the original Dominator, I can't tell you whether you'd notice a difference between it and the new version, but I can tell you that this is the most thrilling car I've ever driven.

And as a wide-eyed onlooker spit dirt out of his gaping mouth and asked me the name of the car that was burning up the track, I smiled and said,"The Dominator."

\*Here are the addresses of the companies mentioned in this article:

Custom Works R/C Products, 3720 Easton Dr., Suite 6, Bakersfield, CA 93309.

Delta Manufacturing, 27 Racecar Ct., Lorimor, IA

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718

Novak Electronics, Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707.

Dymond; distributed by United Model Products, 301 Holbrook Dr., Wheeling IL 60090.

Autographics of California, 7401 White Lane #1, Bakersfield, CA 93309.

### BUDGET RACER

(Continued from page 38)

turn. Run just enough toe so the car tracks well, but not enough to create a lot of drag. Make final adjustments at the track, one at a time. Also at the track, set your wing position for best front-to-rear car balance and use as little wing angle as your car (and driving) will tolerate. Remember, downforce equals drag.

I overbend the wing-mounting wires for too much down angle, then I use wooden dowels that ride in brass tubes to adjust the angle. This system provides repeatable, identical settings. You can also adjust the wing angle side to side in order to apply more downforce to the left or right side of the chassis.

If you've followed this guide accurately, you'll have a class-minimumweight RC10 sprinter that will really haul. You'll discover, as I did, that it's a lot of fun to pass on the low side in the middle of a turn!

See you at the track.

\*Here are the addresses of the manufacturers mentioned in this article.

Associated Electrics, 3585 Cadillac Ave., Marina Del Rey, CA 90202

Novak Electronics, Inc., 128 -C E. Dyer Rd., Santa Ana, CA 92707

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820. Advance Engineering, P.O. Box 766, Woodland

Hot Trick Racing Cars, Inc., 1157 Cushman Ave., San Diego, CA 92110.

Andy's R/C Products, 466 W. Arrow Hwy., Unit K. San Diego, CA 91773

Robinson Racing Products, 501 Peach, Santa Ana, CA 92704

Team Losi, 1655 E. Mission Blvd., Pomono CA



### Advice For Car Modelers: ®Am It! \$19.95 #RED 04 Mars Light - rotating beacon LIGHTS - Ram #RED 19 Car Headlights, 7.2 - 9 volt 10.95 #RED 20 Car Tail & Stop Lights - 9 volt 19.95 #RED 21 Car Turn Lights - Automatic operation 29.95 SOUNDS - Ram #RED 23 Real Strobe Light (Xenon) - 3 volt 29.95 #RED 24 RAM Lites - Off road, all aluminum 14.95 #RED 28 RAM Lites w/mounts for Tamiya Roll Bar 19.95 #RED 29 RAM Lites w/fold-away Roll Bar 24.95 #RED 31 3 Way Simple Siren - 3 sounds 19.95 #RED 32 Battery Peak Detector - 4-8 cells 29.95 #RED 37 Simple Servo Setter - adjustable fail safe 19.95 SEE YOUR DEALER • SEND STAMPED ENVELOPE FOR RAM INFO

39.95

24.95

39.95

10.95

29.95

#RED 46 Machine Gun Sound Module

#RED 43 Corner Marshall Alarm - the race winner

#RED 38 Gas/Diesel Engine Sound & Horn, 4" Speaker

#RED 40 Gas/Diesel Engine Sound & Horn, 2" Speaker

#RED 39 VW Car Engine Sound & Horn, 2" Speaker

If unavailable locally send check, money order or full credit card info for the cost of the item plus \$2.00 (\$5.00 foreign) for immediate shipment. Include full address for U.P.S. Sorry no C.O.D.

4736 N. Milwaukee Ave. - Chicago, IL 60630

### SCOPING OUT

(Continued from page 54)

minimum length that permits a controller to be "direct-wired" to a car.

I installed the ESC 300PT in my test setup, following the supplied instructions. The instruction book is quite good and even includes set-up hints for some of the more popular radio transmitters. It was refreshing to read an instruction sheet that was written in English, and not in a strangely worded translation from Japanese.

KYOSHO BIG BRUTE

KYOSHO NSR 500

The adjustments are the standard 2-pot type: one for setting neutral and the other for adjusting "full on." (Of course, there's the familiar red LED for detecting this.)

The supplied screwdriver was a disappointment: It's useless junk! (How's that for griping about a "free" screwdriver?) The adjusting screws were slightly misaligned compared with the adjustment holes. The Tekin screwdriver has a misshaped soft plastic tip that wouldn't mate with the misaligned adjustment screw. I solved the problem by using a jeweler's screwdriver. In the past, manufacturers have cautioned against using metal screwdrivers. However, the Tekin instruction booklet says it's okay to use a 3/32- or 1/8inch screwdriver (Phillips or straight-type will work), but exercise care.

Tekin has eliminated the need for guesswork in determining the correct direction in which to rotate the trim pots by printing the necessary information right on the cover of the controller. The oscilloscope verified that the indicated direction of rotation was correct and that the built-in LED identified the full-throttle

(Continued on page 120)

### ACE HARDWARE HOBBIES (415) 692-2637

1863 El Camino Real, Burlingame, CA 94010

	CARS	Car Price	Package Price	RADIOS		BATTERIES	
GR/	ASSHOPPER	\$69.99	\$158.99	FUTABA			
HOI	RNET	\$99.99	\$188.99	2GS	\$53.99	1400 MAH 7.2V (Flat)	\$19.99
BLA	ACKFOOT	\$99.99	\$188.99	MAG SPORT	\$69.99.	1200 SCR 7.2V (Flat)	\$25.99
LUN	NCHBOX	\$95.99	\$184.99	MAG JUNIOR	\$89.99	1700 SCE 7.2V (Flat)	\$33.99
MIΓ	ONIGHT PUMPKIN	\$114.50	\$203.50	MAG SPORT/MC112B	\$104.99	1200 MAH 8.4V (Flat)	\$22.99
MU!	D BLASTER	\$139.99	9 \$228.99	MAG JUNIOR/MC112B	\$119.99	1200 MAH 8.4V (Hump)	\$28.99
CLC	OD BUSTER	\$249.99	\$338.99	2PD/S132H	\$165.99	1200 SCR 8.4V (Hump)	\$31.99
RC1	10 (6010)	\$139.99	9 \$228.99	3PB PCM/S132H	\$259.99	1700 SCE 8.4V (Hump)	\$38.99
ASS	SOCIATED YZ10	\$239.99	\$379.99			<u> </u>	
TEA	AM LOSI JRX	\$175.99	9 \$315.99 *	SPEED CONTR	ROLS	CHARGERS	
<u> </u>	ALL PACKAGES	INCLUI	DE:	NOVAK	<del></del>	PROTECH	
<i>l</i> 1	Futaba 2GS	Radio		T 4 SERIES	\$79.99	707 AC/DC PEAK	\$69.99
1 1	7.2V Racing I	Battery		T 1 SERIES	\$119.99	700 DIGITAL	\$79.99
<u> </u>	Protech 703 C	•		T 1 X SERIES	\$139.99	701 AC/DC ADJUSTABLE	\$55.99
* 2D A (2112D C 1 2 1 D 1 2 2 C				702 AC/DC 6/7 CELL	\$47.99		
* 2P w/MC112B Speed Control Replaces 2GS		FUTABA		703 DC ONLY	\$29.99		
OTHER AVAILABLE CARS:		MC112B/12B	\$65.99	MOTORS			
KY	OSHO OPTIMA MI	.ID		MC111B/11B	\$86.99	STOCK (ALL MODELS)	\$21.99
KY	OSHO TURBO MII	D SE		MC110B/10B	\$99.99	MODIFIED (ALL MODELS)	
KY	OSHO TURBO ULT	ТІМА	ODDEDING	CINEODMATION: COD	~44 \$2 50 (C	ash or Money Orders Only). Ha	
	OCTIO NEC NECES		OKDEKINO	TINFORMATION, C.O.D. a	100 \$2.50 (Cr	ash of Money Orders Only). Ha	Tiguing

WHEN ORDERING ASK FOR JR.

Call For KYOSHO Prices Prices Subject To Chage Without Notice!

add \$4.50. We Pay Shipping! California Residents add 7% Tax. Send for free Catalog.

CALL - Mon-Fri 9-6

Sun 10-3

Sat 9-5

VISA & M/C ACCEPTED

by RICH HEMSTREET

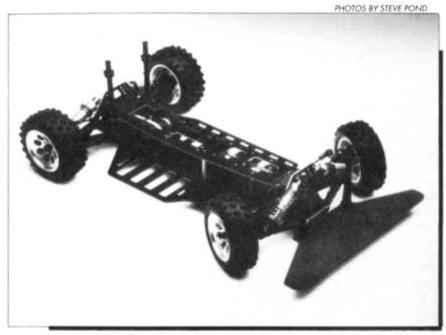
# KYOSHO



### **OVAL CHALLENGER**

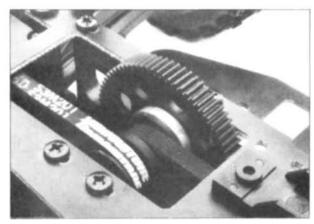
ACK IN 1986, when Kyosho decided to get serious about world-level off-road racing, it introduced the Ultima, and less than a year later, Kyosho had successfully challenged the reigning champion and won the 2WD Off-Road World Championship. During that time, Kyosho also developed the Optima Mid for 4WD off-road racing. Although the Mid didn't win at the 1987 Worlds, it did qualify for five of the ten 4WD A-Main starting spots at the Worlds.

Kyosho has just introduced a brand-new car for a style of racing unique to America-4WD dirt oval R/C racing. A few years ago, you could be competitive in the 4WD dirt-oval class by simply mounting a wedge stock-car body on a competitive 4WD off-road car and heading

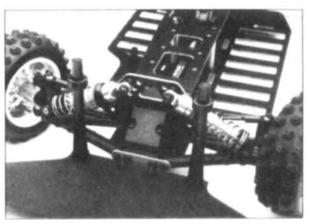


The new 4WD Slingshot is designed for one thing: tearing up dirt ovals.

to the track. Even when it became popular to lower the cars, only minor changes were required to get your offroader's chassis close to the ground. But suddenly the 4WD off-road cars were getting their doors blown off by a simple car designed specifically for 4WD dirt oval. The Custom Works



The spur gear is directly connected to a jackshaft that carries two belt pulleys; the belts then drive the front and rear axles.



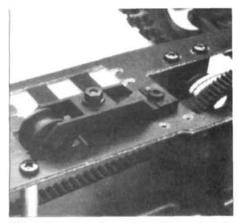
Gold, oil-filled, coil-over shocks are used front and rear. Kyosho obviously didn't want the car to be very tall; thus the severe angle of the shocks.

Dominator became the car of choice for dirt oval's fastest class. Now Kyosho has targeted a brand-new car, the Slingshot, for the dirt-oval market.

The ¹/10-scale 4WD Slingshot uses a dual belt-drive system, with the shorter belt running from a small pulley on the spur gear/jackshaft to the rear-axle pulley as the longer belt goes from a second small pulley on the spur gear/jackshaft to the front axle. There are no differentials on the Slingshot, only direct drive. Oneway bearings are used on the front wheels, but both rear wheels are always turning at the same speed.

The Slingshot has fully independent suspension, with A-arms and upper control rods on each corner of the chassis. Four, short, gold, oil-filled, coil-over shocks are included and there are chassis cutouts for mounting up to seven batteries on the left side of the car. There are also four battery cutouts on the right side of the chassis that can be used to adjust the balance of the car, or if you want to try the Slingshot on a roadcourse. The motor also mounts on the left side of the chassis, which is where most oval-track racers want it, and the composite frame is lightweight and rigid. Body, motor and electronics aren't included with the Slingshot, and this is the way most serious racers prefer to buy a car.

Watch Car Action for a full review of the Kyosho Slingshot in the near future, and don't be surprised if you also see a Slingshot versus Dominator shootout down the road, as Kyosho challenges another reigning champ.



This belt tensioner is located on the top chassis plate to keep the longer front belt from slipping.

### **QUARTER FLASH**

### **MODIFIED MOTORS**

OVAL 11-16 TURN AV OFFROAD 15-18 TURN PI 10th&12th ONROAD 14-17 TURN

MOTOR REBUILDS
AVAILABLE \$12.00
PLUS PARTS!!!!!!

### QUARTER FLASH STOCK MOTOR 30 DEGREES, WET MAG.

ALL STOCK MOTORS ARE FULLY SEATED, DYNO-TESTED AND READY TO RACE RIGHT OUT OF THE

PACKAGE!!!!

### **QUARTER FLASH FLASH PACKS** SCE & SCR AVAILABLE IN 4,6&7 CELLS

DEALER INQUIRIES INVITED

QUARTER FLASH MOTORS 1143 N. WINSTEL TUCSON, AZ. 85716 (602) 290-0833



A.J.'s R	TRUCK PULLING	
The CHALLENGER	PDI Turbo Zeta w/Rev 32 cells 259.95 PDI Hydro Zeta 169.95	5
In	Black Magic Motors: Stock Truck Pulling 27.95 Truck Pulling Hi-Torque 69.95	
CHALLENGER	Clodbuster Matched Pulling (Pair) 139.95 Clodbuster Hi Speed Matched (Pair) 139.95	5
	T/FD & Funny Car Wet Magnet 82,000 69.95 Voo Doo Wet Magnet 102,000 rpm 69.95	5
	New 750 Size Hi Torque Pulling (5 Pole) Gear Reduction Trans 3 to 1 Clodbuster Trans 4 to 1 59.95 52.95	5
"The Unbeatable Weight Sled" All Metal Construction Sealed Bearings on the Axle Anodized Finish	12.5 ga Silicone Wire 1620 Strands 6.95 Imex Truck Pulling Tires Blk Ft/LnchBx 18.95	5
Weighs 9½ lbs. For 1/10 & 1/12 Scale Fully Assembled Satisfaction Guaranteed	Clodbuster Pull-Master 1 lb. Weighted Wheels (pr.) 64.95 Pulling Packs	5
The Challenger	10 Cell Sanyo SCR 1200mah Pack 69.95 14 Cell Sanyo SCR 1200mah Pack 89.95	5
	<ul> <li>Complete Line of Drag Racing Accessories</li> </ul>	





### DURATRAX ALUMINUM WHEELS

Complementing its incredibly large tire line, DuraTrax announces the release of its new Aluminum Wheels. Precision-turned from heat-treated bar stock and machined to a very close tolerance of .008 inch, these aluminum wheels are strong and durable. Brilliantly anodized in silver, red, blue and gold, they stand out from the crowd and have a weight-saving 8-hole hub design. Like other DuraTrax products, these aluminum wheels are economically priced.

For more information, contact Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.



### DAHM'S MOUNTING TAPE

This special tape (No. 400) is slightly thicker than ordinary two-sided tape and will cushion your electronic components. It's designed to reduce vibration transmission and provide thermal insulation. Also available is the Tight and Low tape (No. 401), which is a high-strength, low-profile servo tape that's specially designed to resist the type of impacts that would break weaker tapes, but it can be removed in one piece from most surfaces. Price: \$2.98.

For more information, contact Dahm's, P.O. Box 360, Cupertino, CA 94931.



### COMPOSITECRAFT KYDEX BUMPER

CompositeCraft now manufacturers a <sup>3</sup>/<sub>32</sub>-inch Kydex bumper (No. 50050) that will fit most <sup>1</sup>/<sub>10</sub>-scale on-road cars. This bumper will protect the front-axle assembly and prevent extensive damage to the body during hard impacts. The Kydex is strong and flexible, yet light. This bumper won't hamper your car's performance with unnecessary weight, and it keeps the suspension components intact. Price: \$4.95.



### PRO AXLE

CompositeCraft now offers a \(^{1}/10\)-scale graphite/aluminum composite axle (No. 50045) for serious \(^{1}/10\)-scale onroad racers. For the smoothest diff operation possible, the axle is designed to be used with a ball bearing in the center of the spur gear. The graphite portion of the axle permits superlight weight, while the aluminum portion, made of a lightweight alloy, keeps the diff components running true and smooth. Price: \(^{\$35}\).

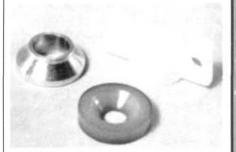
For more information, contact: CompositeCraft, 2400 Sand Lake Rd., Orlando, FL 32809.



### TWINN-K GRAPHITE BLANK

This Graphite Blank (No. 9827) comes complete with instructions for cutting and adhesive paper for tracing. Some of its many uses include chassis plates, shock towers, receiver mounts, servo mounts and a number of other applications that require a strong, light material. The sheet of graphite measures 9x11x.09 inches. Price: \$79.

For more information, contact Twinn-K Inc., P.O. Box 31228, Indianapolis, IN 46231.



### BUD'S RACING PRODUCTS DIFF THRUST CONE

Bud's Racing Products' Thrust Cone Set (No. 2140) is designed for use on any pro-type ball diff where a ball bearing is used in the outer part of the wheel or wheel hub. This set eliminates the diff's <sup>1</sup>/4-inch blue thrust bearing and uses the ball bearing in the wheel or wheel hub as a thrust bearing to produce much smoother action and less rotating weight. This set also includes the popular plastic spring washer and nylon, locking, diff wing nut. Price: \$3.95

For more information, contact Bud's Racing Products, P.O. Box 601, Amherst, Ohio 44001.

Descriptions of new products appearing on these pages were derived from press releases supplied by the manufacturers and/or their advertising agencies. The information given here does not constitute endorsement by Radio Control Car Action, nor guarantee product performance or safety. When writing to the manufacturer about any product described here, be sure to mention that you read about it in Radio Control Car Action.



BL 5189 WING BUTTONS FOR MOUNTING WING TO WING WIRES



### BOLINK WING BUTTONS

These Wing Buttons (No. 5189) are ultralight parts with which to attach your <sup>1</sup>/10- o r <sup>1</sup>/12-scale wing to the wing wires, with setscrews that will allow you to lock the wing into any position. The aluminum construction allows you to tighten down on the wing wire more firmly than on nylon mounts, and this will prevent wing movement. Price: \$3.29/pair.



### WING WIRE MOUNTS

These are designed to be used in place of wing tubes, so that the wing wires will be held tightly with setscrews instead of depending on a friction-fit. They can be used on any number of cars, including the on-road and offroad classes. Price: \$3.49/pair.

For more information, contact BoLINK R/C Cars, Inc., 420 Hosea Rd., Lawrenceville, GA 30245.



### HIROBO TOYOTA CELICA 4WD

Here's a truly ready-to-run kit that will satisfy anyone's craving for R/C 4WD buggies. This buggy (No. HIRC1004) is built tough with super-strong nylon upper and lower arms. The mid-engine design with molded chassis keeps maintenance to a minimum. The great addition to this package is the JR 2-channel radio, which is fully installed and ready to run. Other features include: Mabuchi 540S motor, mechanical speed control, 4-wheel independent suspension, and upper and lower A-arms. Price: \$289.99.



### **ALIEN MID SS 4WD**

The Alien Mid SS (No. HIRC1002) is a high-quality kit that's capable of top finishes at every level of competition, and it's durable enough for neighborhood fun. The mid-engine design offers good weight distribution, and the light plate-style chassis gives plenty of protection. Fourteen ball bearings, three-speed, foil-type speed control and belt drive help prevent breakdown and allow for better top-end performance. Its aerodynamic body catches everyone's eye. Price: \$219.99.

For more information, contact Hobby Dynamics, 4105 Fieldstone, Champaign, IL 61821.



### KYOSHO WRENCH SET

This handy inexpensive tool set (No. KYOC6390) includes all the tools you'll need to perform most maintenance tasks on Kyosho cars. A 4-in-1 box wrench for wheel nuts and three different sizes of Allen wrenches are included. Price: \$2.90.



### RAIDER ARR

Based on the proven "Entry-Level Car of the Year," the new Kyosho Raider ARR (No. KYOC0182) is an assembled version of the original Raider. Featuring a new radical look with neon-colored decals and neon green wheels, the Raider ARR includes all the features that made the Raider so popular.

After installing a 2-channel radio, the Raider ARR is ready to perform and can be easily hopped-up for outstanding competitive performance at the track. Like the Raider, the Raider ARR is built with super-flexible, composite-plastic parts that are rugged and reliable. The mid-mounted LeMans Stock 05 motor and 4-wheel independent suspension give this almost-ready-to-run buggy superior handling and speed. Price: \$149.95.

For more information, contact Kyosho/Great Planes, P.O. Box 4021, Champaign, IL 61820.

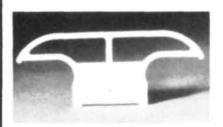




### BONDHUS HEX-KEY SET

Bondhus Tools announces the availability of a new 13-piece Balldriver Hex-Key Set (No. 10937). The BLX 13 includes all the most popular sizes of L-wrenches, including the <sup>3</sup>/<sub>8</sub>-inch hex key that's used in many industrial applications. The BLX 13-piece set includes these sizes: .050, <sup>1</sup>/<sub>16</sub>, <sup>5</sup>/<sub>64</sub>, <sup>3</sup>/<sub>32</sub>, <sup>7</sup>/<sub>64</sub>, <sup>1</sup>/<sub>8</sub>, <sup>9</sup>/<sub>64</sub>, <sup>5</sup>/<sub>32</sub>, <sup>3</sup>/<sub>16</sub>, <sup>7</sup>/<sub>32</sub>, <sup>1</sup>/<sub>4</sub>, <sup>5</sup>/<sub>16</sub> and <sup>3</sup>/<sub>8</sub> inch. Price: \$14.95.

For more information, contact Bondhus Corp., 1400 E. Broadway, P.O. Box 660, Monticello, MN 55362.



### PRO-LINE BLACKFOOT BUMPER

Pro-Line's new Blackfoot bumper (No. 4512) will give your truck extra protection and an impressive new look. Molded from "dyable" nylon, but also available in chrome (No. 4513), the bumper is durable and light. Price: \$4.95 for No. 4512; \$6.95 for No. 4513.

For more information, contact Pro-Line, P.O. Box 456, Beaumont, CA 92223.

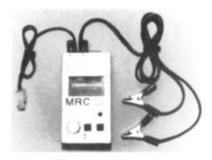


### MRC QUICK CHARGER

MRC has released a Quick Charger that's engineered specifically for the Tamiya

<sup>1</sup>/<sub>14</sub>-scale ready-to-run cars that use eight "AA" rechargeable Ni-Cd batteries. This charger is called the RK950, and it's packed with features designed to get maximum performance from your car and batteries.

The RK950 was built for optimum charging efficiency with the many grades of "AA" Ni-Cds available. It can operate from a wall outlet or from a 12V DC cigarette-lighter socket. A 15-minute mechanical timer and an ammeter help you keep track of the battery's condition. A discharge mode is also available to help "cycle" your Ni-Cds and so prolong their life. Price: \$55.



### **DELTA PEAK CHARGER**

Electric R/C car racing has resulted in a need for improvements in the way we charge Ni-Cd batteries, but if you'd like to charge your batteries the way the pros do, you'd once have had to break your budget to buy a premium quick-charger. MRC has changed all that with the release of its RB495 Delta Peak Quick Charger, which has the same type of technology that racers use, but is simple, safe and affordable.

This charger is built with a Mosfet circuit with pulsed output in both

quick-charge and trickle-charge modes. Powered from 12 volts DC, the RB495 can charge Ni-Cds from 450 to 1800mAh, in 4- to 7-cell configurations, with an adjustable-current output from 1 to 9 amps! Other standard features are a built-in, high-grade, analog current/voltage meter, a 7.2V output connector, output post terminals, a 15-amp fuse for short-circuit protection and a unique electronic melody-maker that lets you know if you've connected your charger correctly and notifies you when the Ni-Cds are charged. Price: \$70.

For more information, contact Model Rectifier Corp., 200 Carter Dr., P.O. Box 267, Edison, NJ 08818.

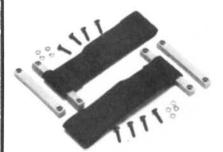


### NERON ASSOCIATES DYNA-METER

The Dyna-Meter is a precision instrument that's designed to monitor the condition of your electric motor. It can be used both for checking a specific motor during a day's racing, and to monitor the motor's condition as the season progresses. The Dyna-Meter can also be used to determine which of two or more motors performs better in a particular car. The performance of your motor is registered on the Dyna-Meter's analog scale, and by recording the highest number that your motor reaches, you can monitor its performance. Price: \$29.95.

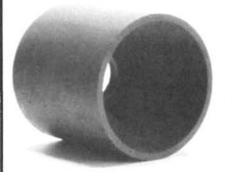
For more information, contact Neron Associates, P.O. Box 348, Germantown, MD 20874.

Descriptions of new products appearing on these pages were derived from press releases supplied by the manufacturers and/or their advertising agencies. The information given here does not constitute endorsement by **Radio Control Car Action**, nor guarantee product performance or safety. When writing to the manufacturer about any product described here, be sure to mention that you read about it in **Radio Control Car Action**.



#### CRP BATTERY STRAPS

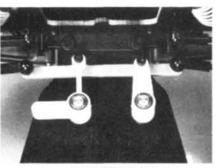
These new CRP saddle-pack battery straps (No. 1029) are designed to hold split-pack batteries in most <sup>1</sup>/10-scale on-road and off-road cars. This will eliminate the need for battery strapping tape, which is not only time-consuming to apply, but also breaks frequently when the chassis scrapes the ground. These battery straps are strong, reliable and ideal for quick battery installation. Price: \$9.50/pair.



#### **ON-ROAD WHEELS**

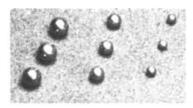
These new on-road wheels from CRP (No. 4129) are designed to fit the rears of most popular <sup>1</sup>/10-scale on-road cars. Molded in bright yellow impact-resistant plastic, these 2x2-inch wheels will accept most trued and un-trued donuts. Price: \$5.99/pair.

For more information, contact Custom Racing Products, 3250 El Camino Real, No. B3, Atascadero, CA 93422.



#### TEAM LOSI BALL-BEARING STEERING KIT

Team Losi now offers a full bearingsupported steering/servo-saver kit for its popular JR-X2 off-road racer. The No. A-1504 kit features four precision ball bearings and special high-rate bellcrank/servo saver. The kit is a direct-replacement item that requires no modifications or special tools. The ultra-tight tolerances and smoothness of the ball bearings yield smooth operation even under the highest loads. Price: \$29.95.



#### 1/16-INCH HARD BALLS

Team Losi now offers 1/16-inch Hard Balls (No. 4017), which, with Losi's 1/8- and 3/32-inch units, provide racers with a specialized ball for every R/C application. The precision-ground grade-25 balls are made of tungsten carbide, which is at least 40 percent harder than any other ball available. This dramatic increase in concentricity and hardness requires less pressure for smoother differential operation and longer life. Team Losi hard balls are used in the differential gears and thrust bearings of the world's top racers in 1/12 and 1/10 scale. They make a difference! Price: \$4/package of eight.

For more information, contact Team Losi Inc., 1655 E. Mission Blvd., Pomona, CA 91766



#### VRP LUBRITOOTH

VRP Lubritooth (No. LT 512) is a high-tech bonding lubricant for use on gear teeth. It's permanent, dries quickly and won't attract dirt. Because it's water-soluble, it won't dry out in the bottle, and it won't permanently stain your hands or clothes. Price: \$3.95.

For more information, contact Verona Racing Products, 4555 Groves Rd. No. 15, Columbus, OH 43232.



#### PARMA ULTIMA BODY

Parma proudly offers a direct-replacement body for the Ultima (No. 10268)—complete with undertray and wing. Called the Ultratech, it's designed to give your car unsurpassed aerodynamics, great looks and dirt-free operation of the sensitive electrical components. The Ultratech components, undertray and body are also available separately. Price: \$29.50.

For more information, contact Parma International, 13927 Progress Pkwy., N. Royalton, OH 44133.

## AUTOSCORE

The ultimate race scoring and race management program

- Menu driver user friendly
- Quickly resolves frequency and number conflicts
- · Sets up heats and mains in minutes
- Scores all qualifiers and mains by racer's name
- Will score up to 10 qualifiers and 1 main for each racer
- Can handle up to 1000 racers in 30 classes
- Prints complete standings by name or position
- Positions, lap times and speeds continuously displayed
- Runs on IBM pc or Compatable
- Only \$250, PRO version \$450
- Can be used with the AMB scoring system

• 1/4 scale version also available

Used by
R/C SPEED WEEK
NORRCA
R/C THUNDERDROME
AND MANY MORE

Send for FREE demonstration disk (Include \$1.00 for shipping & handling)

B & B Software - 2146 Palomar Ave Ventura, Ca 93001 (805) 643-2042

# Fabricate Custom Pieces-Economically



= with =

# RC VAC-U-FORM

...4 different models/2 sizes ... female molding capabilities

... easy to operate

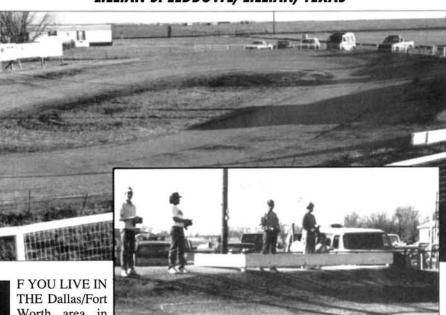
Exclusively distributed by:

Ron Charles & Associates, Inc.
P.O. Box 805
Wilmette, IL 60091
1-312-251-4777

HOT TRACKS

Welcome to "Hot Tracks." Each month, we'll choose an outstanding track to feature in this column. To qualify, send in some high-quality, black-and-white photos of your track, along with a description (approximately 500 words), and tell us why your track should be chosen. Send your entries to Hot Tracks, Radio Control Car Action, 251 Danbury Rd., Wilton, CT 06897.

LILLIAN SPEEDBOWL, LILLIAN, TEXAS



F YOU LIVE IN THE Dallas/Fort Worth area in Texas and want 1/4-scale racing with full-scale fun, get down to the Lillian Speedbowl\* in Lillian. This banked, asphalt, 1/16-mile oval facility has

lights for night racing, grandstands, a P.A. system and a great concession stand run by the Lillian Volunteer Fire Depart-

ment.

The racing program includes the unpredictable, open-wheel thrills of sprint cars, the close, door-to-door excitement of the Grand National stockers, and the all-out speed of the low-slung supermodifieds. Racing is now held on the second and fourth Saturday nights of each

month, beginning at 7 p.m., and 20 to 25 racers usually show up for each event.

Located on Highway 917, five miles

south of Mansfield and two miles north of Lillian, the Lillian Speedway has been operating for four years and is participating in the QSAC Mid-West Points Championship. C'mon over!



\*For more information, contact:

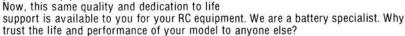
Pete Qualline, Lillian Speedway, PO Box 630, Lillian, TX 76061. Tel: (817) 783-8022. ■

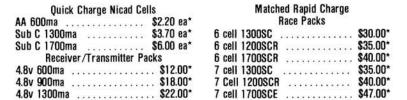
# THE BATTERY STORE

The next time you buy a Nicad battery pack be sure you get:

- · Heavy duty welded tab construction
- · Computer matched cells
- . Test certification printout with each pack
- Unconditional 1 year warranty
- Premium Tested Sanyo cells

Periphex is the manufacturer of the highest quality battery packs used in life support applications by police, fire and EMS personnel.





\*Add \$4.00 S & H up to 4 cells or first pack, \$1.00 for each additional 4 cells or pack. Periphex assembles all battery packs. We offer the ability to configure custom packs at reasonable prices. Full lines of Gel-Cells, Nicad and Alkaline Cells also available.

The true value of any battery system is determined by service, performance and dependability. Make your choice Periphex. Nobody has a better battery or offers a better value. Call or write for a complete catalog. Dealer inquiries invited.

#### Periphex inc.

VISA

149 Palmer Road Dept. M . Southbury, CT 06488 (800) 634-8132 • in CT (203) 264-3985 Ext. 63





## **SCOPING OUT**

(Continued from page 111)

point accurately. The voltage drop at 12 amps for the battery-to-motor connector test was .24 volt. From this, I calculated that the ESC 300PT has a .02-volt-peramp voltage drop, or .02 ohm of resistance. The voltage drop measured at the 2-inch point on the wires was .07 volt, which I calculate gives .0058 volt per amp of voltage drop, or .0058 ohm of resistance. The 2-inch reading is higher than the specified .004 ohm, but all manufacturers list only the drop for the FETs, not for the wire, the pc board, or the solder joints. They definitely don't include connector resistance. The manufacturers play this numbers game out of self-defense and a desire to standardize.

My final test is the heat build-up test, which was run for 15 minutes at full throttle and 15 minutes at half throttle. I deliberately leave off the heat sinks and provide no cooling while passing a fairly hefty 15 amps through the controller. The FETs became quite warm, but not hot. With heat sinks installed and an adequate supply of cooling air, there should be no problem with heating, even under ardu-

(Continued on page 122)





ULTRA-Seals are Frictionless Sealed Bearings that are protected from dust and dirt. They have been racer tested with tremendous results.

ASK YOUR LOCAL HOBBY SHOP FOR: RC10 BEARING KITS WITH NEW ULTRA-SEALS

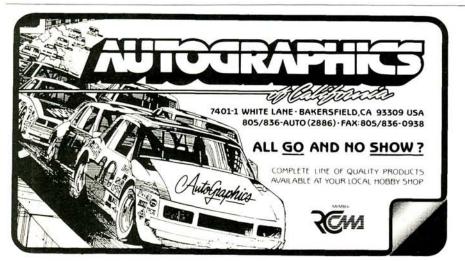


Or Send \$3.00 for Bearings Guide and Further Information to:
7040 W. PALMETTO PARK RD. • SUITE 2304 • BOCA RATON, FL 33433

OR CALL

PHONE: (407) 488-9606 FAX (407) 488-9609 -NORTH AMERICA TOLL FREE-

1-800-332-3256 (U.S.) 1-800-553-3256 (CANADA)



## **SCOPING OUT**

(Continued from page 120)

ous racing conditions.

Then it was time to take a shot at melting it down!—after all, Tekin has made much noise about its Tempfets being "bulletproof"! I built a shorting device with two large alligator clips and a 2-inch piece of monster wire. I then clipped this contraption across the output of the ESC 300PT with the throttle wide open. The big lab supply groaned, and the wiring was soon hot to touch. The speed controller finally shut down after 1 minute of handling the dead short.

I was fairly sure that I had managed to destroy this speed controller, but after allowing it to cool for a minute and resetting the Tempfet circuit by disconnecting and then reconnecting the battery, I found that the ESC 300PT was pumping full current into the short again. I ran the test three times, and the controller sprang back to life each time. It seems that as long as you don't run it wet or wire it up incorrectly, the controller should withstand a lot of abuse.

With the lab testing finished, it was time to install the ESC 300PT into my trusty Turbo Ultima. I used my stock-class car, because this is my only car that doesn't have its motor and battery hardwired. I wanted to try the ESC 300PT with its full set of Tekin-supplied connectors in place. As supplied, this controller has wires that are long enough to mount it anywhere on a car or monster truck and still reach the battery and motor. Long wires are convenient for installation in a large truck, but they hurt performance.

As I pointed out in the lab test, the connector-to-connector test result is poor, but the test run at the 2-inch point on the wires is very impressive. I guess I'd call this the "room-to-grow" approach: An entry-level car owner can get rid of his pesky mechanical speed controller along with its servo without having to learn how to solder. As he progresses, he can cut off the connectors and most of the wire and, by doing so, increase the performance of his speed controller threefold.

Another interesting item was a pair of 1-inch-long black twisted wires that stuck out of the side of the controller. A review of the instructions revealed that if you short the two wires together, the controller will work in a 4-cell car. This is great, because the ESC 300PT is very small and should work well in 1/12-scale, 4-cell cars.

I completed the installation, charged my 6-cell SCR battery pack and headed to the track, where the ESC 300PT per-

(Continued on page 128)



ITH ALL types of R/C racing, tires play a major part in determining whether you make the A-Main or just make doughnuts. Unlike most types of R/C racing, however, there are three types of tires that can be used on a dirt oval. You can use foam and sometimes treaded rubber tires on carpet or asphalt, and a variety of spiked tires on dirt off-road tracks. Of course, you wouldn't think of using spikes on carpet or asphalt, and vice versa.

On a dirt oval, it's quite possible to run any combination of the three types of tires, but making the right choice can be confusing. This article will help you make that choice.

I consulted Rob Cutman, manager of R&D Hobbies in Hummelstown, PA; his name may be familiar to those of you who follow the national dirt-oval racing scene. Rob is the 1988 ROAR Region 1 2WD Modified TQ and Champion and 2WD Stock Champion. This has been a good year for Rob: He finished 2nd overall at the Reedy Invitational Race of Champions, and at the prestigious JG Oval, he took 4th in 2WD and 6th in 4WD. At the ROAR Dirt Oval Nationals, he qualified 3rd and came in 5th in the 2WD Modi-

fied Class. He's also the 1989 ROAR Region 1 2 WD Stock, 2WD Modified and 4WD Modified Champion. I think this list of accomplishments qualifies him as an expert on tire selection.

When Rob shows up at a track, he tries foam slicks on the front and rear of his twowheeler. If they hook up, that's what he'll stay with, but if not, he'll progress to grooved foams. If more rear traction is needed, he'll try Advance\* Grand Prix tires on the rear.

If the track is hard with some loose dirt, then Rob uses Grand Prix tires on the rear with Pro-Line\* diamond-tread or Schumacher\* Mini Cat Spikes on the front. Sometimes, track conditions call for Mini Cat Spikes on the front and rear because they make good contact with the track and "ey cut through the loose stuff. Rob prers the Schumacher tires, because their gh rubber content generally makes the action better. Tires with a higher plastic content are harder and provide less traction. For a very loose track, Rob likes the Schumacher Large Cat Spikes.

The diameter and width of the front tires also make a difference in handling. It's usually better to use large-diameter (1.9 to 2.1-inch) tires with a narrow width (around .75 inch) to hook up. The response is faster with the narrow width, and they create less rolling resistance and allow the car to maintain speed through the corners. While wider tires with a smaller diameter can get hooked up, you're better off trying to make the narrower tires work. The car will be faster, which is what we're all after.

Tire selection is much simpler for 4WD, and foam tires seem to be the way to go. At the 1989 ROAR Dirt Oval



The cut-foam tires shown here on the Dominator are very effective for smooth, hard-packed tracks.

# RACING TO BRING YOU THE BEST TIRES IN THE WORLD.

ace Engineered Design Tires are the newes, development of the PRO-LINE® Racing Team. RED Tires combine high-tech rubber compounds and competition tread design geared for the most specific track conditions. RED Tires deliver unmatched performance to RC Racers who want only the best.

RED

# Race Engineered Vesign





# **OVAL TIRES**

Championships, all the cars in the Stock and Modified 4WD A-Mains were on foam. The ¹/8-scale gas foam tires provide great traction and durability. The width of the tires is much more important, as the compound (softness) of the foam doesn't have much effect on handling. A wider tire will be more stable, but again, it offers more rolling resistance. In general, try to get narrower tires to hook up before going to wider tires.

The tips in this article should be used to help you choose your tires for dirt-oval racing, but they aren't meant to be taken



Advance's Grand Prix Arrowhead tires are one of the most popular for sprint cars. The aluminum wheels shown are sharp-looking and frequently used for Concours, but to save weight, racers use the plastic wheels.

as hard-and-fast rules. Depending on track conditions and your driving style, you might find that tires other than those mentioned here will work fine. If so—terrific! If not, I hope this will make your search for traction easier. Above all, experimentation is the key to finding the right setup. Good luck!

\*Here are the addresses of the companies mentioned in this article:

Advance Engineering, P.O. Box 766, Woodland Park, CO 80866.

Pro-Line USA, P.O. Box 456, Beaumont, CA 92223. Schumacher; distributed by TRC, P.O. Box 478, Oakboro, NC 28129.



# **SCOPING OUT**

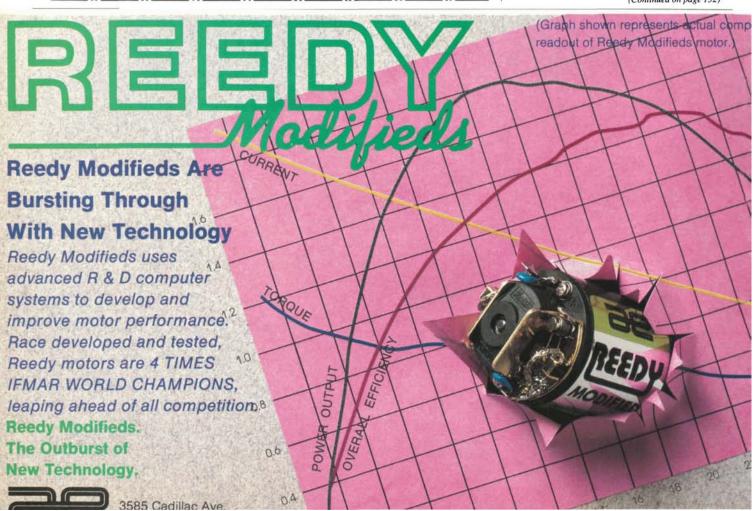
(Continued from page 122)

formed as well as its lab results predicted that it should. Tekin claims to have installed an improved BEC in the ESC 300PT. I use all the noise-reduction tricks in my car, e.g., capacitors, short servo leads and careful placement of components. I even have a separate BEC with extra-large filter capacitors. For this test, I used the ESC 300PT's BEC instead of the one that was in my car, and the car ran without glitching. I then ran it hard on my local, flat, dirt-oval track, and I found that the throttle response was very smooth and the braking action was strong.

What I really like about this controller is its indestructibility. To answer the question, "What do Tempfets do for me, and do they help or hinder performance?" First, Tempfets *are* "bulletproof." As for performance, the ESC 300PT's resistance was as low as any seven-FET controller I've ever measured, and it should be a real racing contender.

I disliked the useless Tekin screwdriver and the fact that the adjustment screws were slightly misaligned with the holes in the cover, but both problems were cured by using a jeweler's screwdriver. I also disliked the long wires and lousy connec-

(Continued on page 132)



# ine Super System

# A full range of coordinated Monster Truck Wheels



Truck shown above with dual adapters and wheel covers. This modification can be used on many other cars and trucks.

Bru-Line "Super System" wheels allow most 1/10 and 1/12 scale cars and trucks the use of smaller truck tires all the way to the ultimate Clod Bluster tires.



Kyosho Double Dare with "Super System" wheels and Clod Buster tires. Just one of the many cars and trucks that can use this conversion.

Send \$2.00 For Catalog & Tech Sheet

Bru-Line Industries • P.O. Box 3786 • Center Line, MI 48015

# SCOPING OUT

(Continued from page 128)

tors. Of course, these are easily fixed with wire cutters and some good Sermos\* Powerpole silver-plated connectors. The ESC 300PT really is a good performer; I wonder how much better the ESC 600PT is. (Tekin claims to have installed Select

Pro Tempfets and heavy-duty wire in it.) To answer this question, Car Action has plans for a "Scoping Out" article on the ESC 600PT.

Tekin has reduced its price from \$177.98 ("Scoping Out," December '88, ESC-170 Pro P) to \$115 (ESC 300 Pro T). Is there a price war among the major manufacturers of FET controllers? I'm sure the price reduction is the result of the increased popularity of electric cars, lower development cost (because of past experience) and good old American competition. This is one war that we hammering car drivers are bound to benefit from!

\*Here are the addresses of the companies men-

tioned in this article: Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Sermos R/C Snap Connectors, Cedar Corners Stn., P.O. Box 16787, Stamford, CT 06905.



"The RPM Advantage"

R.P.M. is a complete in house product development, design, moldmaking and injection molding facility. We have the 22 years experience and the state of the art equipment and technology in the plastics industry. All R.P.M. products are designed for maximum strength, durability, lightweight with precise fits.

# GET YOURSELF RACE READY WITH...







RC-10 BELLCRANK SET #7002







JRX2 FRONT ARMS #7340

RPM 14978 Sierra Bonita Lane Chino, CA 91710 / (714) 393-0366 • FAX (714) 393-0465

#### MORE NEW PRODUCTS

7002 - RC-10 Bellcrank Set

7004 - RC-10 Spindle Block Set

7020 - RC-10 1 Pc. Front Suspension Mount

7050 - RC-10 & JRX2 Battery Box

7080 - Nylon Nuts 4-40 or 3mm (8 pcs)

7082 - Nylon Nuts 6-32 (8 pcs)

7084 - Nylon Nuts 8-32 or 4mm (8 pcs)

7088 - Body-Post Hole Punch

7100 - Opt. Mid-Blackfoot Adapter Set

7150 - Ultima-Blackfoot Rear Adapter Set

7200 - Traxxas Bullet Chassis Brace

7220 - Traxxas Bullet Front Arms - Lt. Wt.

7225 - Traxxas Bullet Rear Arms - Lt. Wt.

7230 - Traxxas Bullet Arms Set (4) - Lt. Wt.

7340 - JRX2 Front Arms (Strong)

7345 - JRX2 Rear "Arm" Conversion Kit

7900 - Ladder Chain Sprocket 19T x 5mm

7910 - Ladder Chain Sprocket 18T x 5mm

All R.P.M. products are guaranteed unbreakable when under normal use. (Continued from page 76)

clay, sand and dirt. After a brief explanation to George, the proprietor, he was more than happy to allow me to finish my tests at his facility. Not only are the actual track conditions superb, but the track also has a fully functional pit area that includes electric outlets. (George and his club of racers are also diehard Yokomo

# Pro Puller



#### Competition Tested and Proven

The Pro Puller I and Pro Puller II (shown) rolling chassis feature all aluminum polished gearbox, aluminum final drive gear, ¼" steel rear axle, bronze bushings, standard hitch, molded chassis with metal stiffener, front weight bracket, front and rear tire assemblies. Assembled as shown (exact tires and wheels subject to availability) ready for your 540 size motor, speed controller and radio available at extra cost. Pro Pull I \$199.95 (up to 64:1 gear ratio) Pro Puller II \$239.95 (gear ratios from 80:1 to over 400:1 by changing motor pinion and/or primary spur gear. Many easy increments).

Pro Puller Sled - Finally, a chain driven sled. No strings to stretch or break. Easily adjusted for short or long tracks. This sled will pull the same for every contestant in a class without resetting. The flat, open weight transfer allows the use of the larger weights needed for the open class pullers such as the Pro Puller II. This sled has been tested at over 400 lbs. using the Pro Puller Experimental Truck shown in some of our previous ads. \$285.00 complete with gear ratio charts and weight plans and suggestions.





Pro Puller II standard rolling chassis with the optional 6 motored modified tractor body (custom paint and detailing extra cost). This is a truly unique, competition proven combination. The Pro Puller II chassis with the 6 chrome motors and body, \$299.95. Chrome Hemi's available separately \$5.00 each plus \$1.50 shipping. Tractor or chassis orders include \$7.50 shipping and handling. (Indiana residents add 5% sales tax.)

Please send \$2 for brochure

BENNETT EQUIPMENT 900 East 1300 South - Romney, IN 47981 317-538-2725

fanatics!)

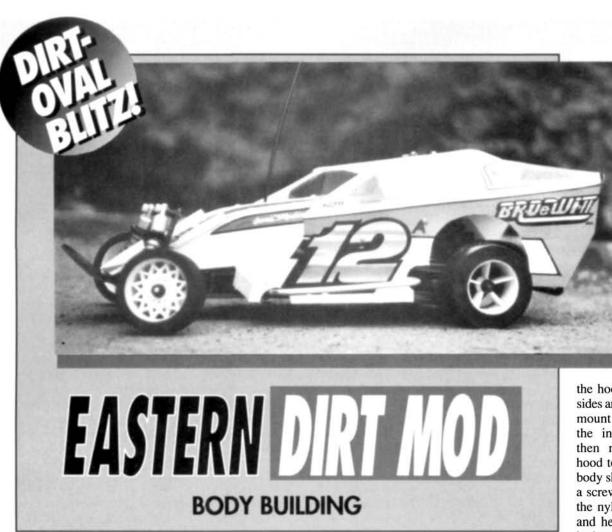
I put the car on the track, headed for the drivers' stand, and I was off. The car chewed up the track like a bullet. With its low CG, the car seemed to suck down to the track, never flinching from the track's natural groove during the entire run. I didn't quite master one turn, lost control of the car, and it barreled into the center divider. When the smoke had cleared, I noticed the front left wheel dangling, so I ran over to get it. Only the tie rod had come off. This happened a few times during my day of racing, and it was frustrating.

So the only real design flaw on the car seems to be a lack of protection from the front bumper. At best, the bumper protects only the front bulkhead, but there are a few good-quality, well-designed, aftermarket bumpers already available.

After my long day at the track, I went home and checked the car thoroughly for damage, and I was impressed to see how clean the body/undercover combo had kept the radio compartment, which was almost void of rocks and debris. The car showed no signs of wear and was ready for another day of torture. As it says on the car's box: "The YZ-10 is designed for

(Continued on page 144)





N THE NORTHEAST, the dirtmodified stock-car class once comprised Vega, Pinto and Gremlin bodies. These racing cars were constructed and raced until the last couple of years—which is more than can be said for their showroom counterparts. The new, wider, more aerodynamic body styles of the Ford Probe, Olds Cutlass, Chevy Cavalier and Dodge Daytona have become popular on the dirt-modified circuit, so I decided to build my own new-style Probe body.

Using construction paper, I designed and cut out the main body shell, inner wing, hood and nose, and I taped them together to ensure that the car would look right. If you decide to make more than one body, you can make templates out of Lexan. After the parts are designed, trace them onto a Lexan sheet with a permanent marking pen, leaving the clear coating on the Lexan so you can write on it and peel it off when complete. When cutting out the parts, use a sharp pair of scissors, or buy the

#### by JOHN FISLER

special scissors for Lexan; dull ones won't make a clean cut. I also used an X-Acto knife for corners and tight spots. Scribe a line and then bend the Lexan a few times to make it break along that line.

With the body parts ready for bending, clamp a part to the edge of the table, and put a metal ruler between the Lexan and the table. The ruler should project over the edge of the table, providing a straightedge on which to make the bends. I bought an 18-inch tabletop brake (a clamping tool with a handle), which has made it much easier to achieve straight, clean bends.

ASSEMBLY: A vise-grip clamp holds the parts together while drilling the holes for the screws. I used a <sup>7</sup>/<sub>32</sub>-inch drill bit. I prefer 4/40 nylon screws and nuts; although metal button-head screws with locking nuts also work well, they're heavier. When the top of

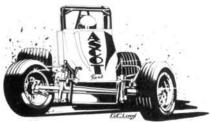
the hood and the sides are together, mount them to the inner wing, then mount the hood to the main body shell. I used a screwdriver for the nylon screws and held the nut by hand. Be careful; these strip very easily.

FINISHING. You'll have to take apart the body to paint it. To protect the body from overspray during painting, leave the clear coating on the outside, peeling off the inside coating for painting. Using masking tape, mask the approximate area where you want the windows to be. Draw the exact design with a pencil, and cut along it with an X-Acto knife. Peel off the excess masking tape, leaving only the window area, and press down on the tape you have left to prevent any paint from bleeding under the tape.

To paint the individual body parts, use paint specifically made for Lexan, such as Pactra\* or Parma\*. When the painting is finished, assemble the body for mounting.

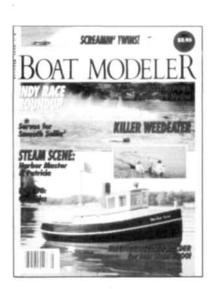
MOUNTING: For mounting on a car such as the RC10 or JR-X2, I prefer to use long body posts that come up through the roof, with the stock body mount for the front. I hold the body in place with body clips. Parma makes a good plastic body-mount sys-





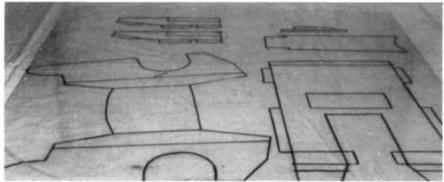
RADIO CONTROL RACE CENTER 18240 SO. VERMONT AVE. GARDENA, CA 90247 (213) 324-3105

> SHIPPED DAILY CATALOG \$2.50

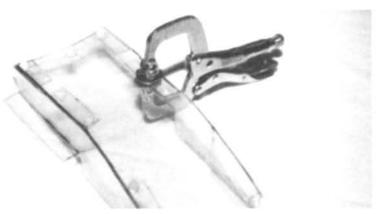


# FOR THE R/C BOAT ENTHUSIAST

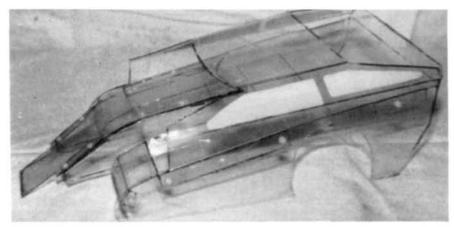
ON NEWSSTANDS AND IN HOBBY SHOPS EVERYWHERE



Leaving the clear coating on the Lexan sheet, trace the outline of the construction-paper templates onto the sheet with a permanent marker.



Use a vise grip to hold the parts together and aligned so that accurate holes may be drilled in both parts simultaneously.



The completed body is easily disassembled to facilitate painting. With a high-profile body like this, don't use Velcro to mount it to the chassis; use body posts instead.

tem with everything you need. I don't recommend using Velcro, because I've seen too many races lost when a body came loose and interfered with the car's operation.

If you see a body design you like at your local full-scale stock-car track, or even if you have a design of your own in mind, you can build a body like this by investing a little time and using some ingenuity.

\*Here are the addresses of the companies mentioned in this article:

Pactra, 410 N. Michigan Ave., Rm. 1280, Chicago, IL 60611.

Parma International, 13927 Progress Pkwy., N. Royalton, OH 41133.



by BILL O'BRIEN & BOB KANE

# "BAD BRAIN" FINDS A SHOTGUN

HE SERIOUS SIDE of maintaining a veritable fleet of cars is that you don't have to do any work on them until you reach the point that you have cars on your shelf that you don't remember buying! I've reached that plateau...which is a polite way of saying that a month has gone by, and I'm still where I was when last we parted company.

The plans to finish the Maxxum were put aside in favor of building a Concept 30 SE. (If you're wondering what a helicopter has to do with dirt, then you obviously don't know how I fly!) I also put off working on the belt system of my Yokomo YZ-10 in favor of another project I'd almost forgotten about, and that's what we'll be poking through this time around.

About a year ago, I tossed a semi-disassembled hunk of parts into a corner of my workroom and promptly forgot about them. They'd originally been assembled into the shape of an MRP\* Shotgun, but after spending a month on the car and getting a grand total of almost 3 minutes of actual running time for my efforts, I thought it best to retire the Shotgun for a



while—at least, until I no longer felt like flinging it through the window of my fourth-floor apartment!

During the first few months of its time in limbo, I meant to replace the stripped front and rear diffs and to try to do something about the flying front dogbones. However, the best laid plans of mice and "bad brains" can go awry when you lose the special hex wrench that MRP supplies with the car and none of your local hobby stores stocks MRP spare parts.

Last month, however, I found the Shotgun carcass under a pile of old *Car Actions* and steeled my resolve. The chassis and front diff were over there, the rear diff was in a box of spare tires, the dogbones were in a plastic tray in my field bag, and so it went. It was like hunting down the parts of the Scarecrow in *The Wizard of Oz* after the flying bat-men attacked. An hour later, I had everything I needed, except for one chassis screw and one of the four small spacer springs that are used to tension the dogbones in the spindles.

Along with the repairs, the Shotgun had a few design features that didn't thrill me, so, as long as I was re-assembling the car, I thought I'd go ahead and make the modifications at the same time. I wouldn't usually spend an entire column on one car, but the Shotgun deserves the coverage.

#### **Time Differentials**

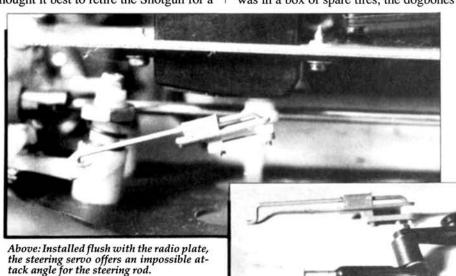
The rear ball diff was shot; I had tightened it up too well, and, with no play in the assembly whatsoever, the nylon gear had developed a bad case of severely rounded teeth. I called MRP, found a mail-order dealer, and ordered a complete diff, a set of weird splined setscrews and that special wrench.

When I first got the Shotgun, the differentials weren't pre-assembled as they apparently are in later kits, so building the

replacement was no problem. (All right, building a thrust bearing from two washers and six small diff balls from *inside* the differential *is* a pain!)

The front diff just needed shimming, and this involves sliding a washer onto the differential output shaft that's at the

(Continued on page 142)



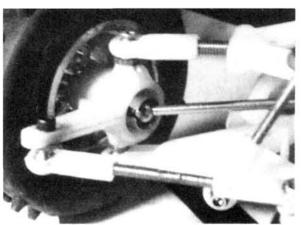
create an extended linkage.

Right: The best way to remedy this is to

# **DIRT DIGEST**

(Continued from page 140)

back side of the gear (behind the teeth). MRP now recommends, even with the pre-builts, that you tear down the diff and add a shim to prevent the differential from walking (shifting from side to side) when lateral thrust is applied. Otherwise, the nylon gear might partially back off the metal pinion and round off its nylon teeth in the process. (Does that sound familiar?)



The stock setup places the end of the dogbone at the edge of the spindle during a full-lock turn. A bump on the track surface can dislodge the dogbone.

You can use some large diff washers (MRP part No. 36-4516) to keep that gear flush. One washer should do the trick, but two might be needed. When you re-assemble the diff into its case, just check that the gears aren't binding: You don't want to cause the problem you were trying to cure!

#### **Dem Bones**

When the diffs were working and hung on the chassis, it was time to finish the assembly. The front dogbones had been a problem throughout the short running life of the Shotgun. At full turn, the dogbone is almost out of the spindle because the Shotgun design places small tensioning springs in the spindle (rather than in the differential half-shaft) to keep the 'bones from sliding around.

The springs always push the dogbones away from the spindle, and MRP counts on the static distance between the spindle and the half-shaft to prevent the dogbones from shooting out. This principle works fine at the rear of the car; but when the front wheels are turning and oscillating from ground contact, the dynamic distance between the front spindle and half-shaft increases enough to spit out the 'bones all too often. (Bob's High Roller,

which uses the same basic setup as the Shotgun, has a similar problem.)

As one spring was lost among the debris of my workroom, the simplest solution would have been to find a Bic Click or any other inexpensive, retractable, ballpoint pen, remove the spring and chop it down to size with a pair of diagonal cutters. Since I spend 90 percent of my life around computers, I couldn't find a pen in the house, let alone a retractable one,

and, at 1:30 a.m., there aren't that many stationery stores open in New York City, even if I wanted to walk to one of them.

I did have some fresh servos, and they come with round rubber grommets for the servo-mounting eyelets. Since these grommets are small enough to fit inside the spindle, and they're elastic (which was the basic property of the spring), I decided to try one. Although it fit, it was a little shorter than the spring, so it let the dogbone move back and forth too freely.

I always accept whatever little sparks of genius I can

come up with, and this time, the thought struck me to use a second grommet in the half-shaft and not in the spindle. It was a good idea! Set up that way, the dogbone was centered snugly between the spindle and the half-shaft, and neither grommet was compressed. With the wheel turned to full lock, the dogbone rode about 1mm deeper in the spindle than it had before, and tugging the wheel through its full suspension travel left the 'bone sitting right where it belonged.

MRP has done a little work on the problem as well: On later kits, there's a new type of steering knuckle made of virgin nylon (part No. 36-4552). (The older knuckles were made from reconstituted nylon. I'm not certain what the exact difference is, but MRP says it helps.)

#### Stilted Steering

The steering servo is installed by cutting a hole in the radio plate and mounting the servo top-down through the bottom of the plate. To keep the correct angle on the steering rod, the servo needs to be mounted on extension tubes with long screws bolting it into the plate, like stilts. (The position of the shaft drive precludes mounting the servo on the chassis plate.)

Because they're raised on stilts and not

mounted on a solid block, some of the torque is transmitted through the stilts and into the radio plate whenever you steer. Since the radio plate is fairly solid, there will be a small amount of servo movement in reaction to the torque. Although nothing critical will happen, this is essentially wasted energy that should be spent on the steering.

You can compensate by flush-mounting the servo and creating an extended steering linkage and put the wasted torque back into the steering linkage where it belongs. Of course, this means that you run the risk of having the linkage bind. No matter how you do it, the Shotgun's usuall heavy steering (with stock components) requires that you be careful in your servo selection.

I've run it absolutely flawlessly with a Futaba\* 132H, which is a relatively expensive mini servo. I've also tried some inexpensive Royal\* mini servos and found that they develop a centering problem after a short time. I've tried three of them, all to the same end: They responded accurately to left/right commands, but I had to manually re-set the center line when I exited a corner by applying an exaggerated amount of turn to the opposite direction. Make sure you use a servo with at least 35 ounce/inches of torque for steering chores.

#### Antenna Havoc

Last, there's a simple precaution you can take to protect your receiver's antenna wire from damage. This wire is routed across the top of the radio plate, around the side and then up under the plate and through the antenna tube in a stock configuration. The radio plate is made of fiberglass, and if your antenna wire rubs against the edge of the plate, it will eventually be severed. Just cover the edge of the plate with plastic electrical tape to protect the wire. Admittedly, this is a simple solution, but it may not occur to you until it's too late.

#### **Next Month**

The Maxxum should show up next month, but something else has interposed itself between us—winter. If you're like me, you run your car all year round (providing you don't freeze in the process), with the firm belief that snow is only dirt with dandruff. Actually, the only problem snow presents is its tendency to become water. Rust and electrical problems are the obvious results that many of us overlook, but there are more than a few precautions

(Continued on page 176)

YZ-10

(Continued from page 134)

racing competition."

\*Here are the addresses of the companies mentioned in this article:

Associated Electrics, 3585 Cadillac Ave., Costa Mesa, CA 92626.

Litespeed, P.O. Box 4765, Spokane, WA 99202. Futaba Corp. of America, 4 Studebaker, Irvine, CA

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672

Reedy Motors, 3585 Cadillac Ave., Costa Mesa, CA

#### Do You Still Use The OLD STYLE/4-PIN DEANS?

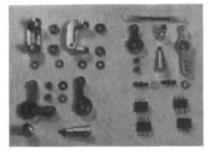


We Have Compatable Gold Pin Connectors in Blue or Black \$1.85/set or 6/\$10.00

# Special

JR 2ch PCM Radio \$89.99

**PYRAMID** Power Supply 12amp - \$70.00 25amp - \$130.00



Ordering Information



(603) 891-1633

Mon-Fri. 12-9pm Saturday 11am-9pm Sunday 12noon-6pm

Please Add \$5.00 shipping & handling add \$3.95 for C.O.D.

SUPER LIGHT BELL CRANK STEERING KIT AND BLOCK CARRIERS FOR THE OPTMA MID and YZ-10, Complete w/Ball Bearings - \$30.00/set Any two/\$50.00 MANY OTHER UNIQUE PARTS for MID, YZ-10, 12L Send \$2.00 for Catalog

• Showroom Prices may vary • Prices Subject to Change without Notice •

BOBBY ETC., INC. 295 D.W. Hwy So., Lamplighter Sq., Nashua, NH 03060

# SIDE-DAM TECH

(Continued from page 100)

the back of the body, because it doesn't seem to make that much difference.

If your car wants to spin out, try moving the side dam back a little bit. If the car isn't turning enough, move the leading edge forward. This is really an experimentation process, but, with the basics, you'll know which way to go.

For safety, Jerry recommends rounding the corners of your side dam. More than one turn marshall has been injured by a flying car with a sharp-edged side dam. As a matter of fact, you might find that if you cut the leading edge of the side dam so that it angles toward the rear of the car, the car will turn a little less. It's also safer.

To attach the side dam to the body, use double-sided servo tape until you get the hang of positioning the side dam, or if you plan to run your car on different size tracks. Another technique is to bolt the side dam on with plastic screws and nuts. (Parma\* makes some that work fine.) If you're like me and carry your car in a bag, you'll have to take the side dam off every time you pack the car up, or it won't fit in the bag. The plastic screws

(Continued on page 162)

# **West Coast** Hobby arehouse

#### HOURS:

M-F 8 a.m. — 6 p.m. (PST) SAT 9 a.m. — 1 p.m. (PST) ORDERS ONLY - 800-622-2092 PRICES & INFO - 805-945-4228

Orders Shipped Same Day! U.P.S. Next Day & 2-Day Available We Accept Visa — M/C — AMEX Diners Club - Carte Blanche

Item No.	ASSOCIATED	Price
6000	RC-10 Basic	129.72
6010	<b>RC-10 Less Bearings</b>	155.25
6012	RC-10 Complete w/	
	Bearings	200.10
8001	RC-10L Basic FG w/	
	Bearings	97.92
8002	RC-10L Basic GR w/	
	Bearings	135.36
	TAMIYA	
C5858	Blackfoot	104.36
C5860	Monster Beetle	149.72
C5863	Lunch Box	97.88
C5865	Clod Buster	255.56
C5868	Lotus Honda 99T	123.80
C5869	Williams Honda	123.80
C5870	Midnight Pumpkin	118.04
C5872	Avante	329.72
	BOLINK	
BOL1315	Invader (Oval) Kit	100.80
BOL1360	Invader Basic	92.13
BOL1362	Invader w/o Elec.	74.88
BOL1368	Eliminator Sport	77.97
BOL1370	Eliminator 10 FG	117.09
BOL1371	Eliminator 10 L/Elec.	89.97
BOL1372	Eliminator 10 GR	158.40

Item No.	TRC	Price
1000	TRC Pro-10 GR	179.95
1001	TRC Pro-10 FG	159.95
	TRAXXAS	
1201	The Cat — Kit	60.30
1601	Bullet Kit	110.55
1401	Fiero GTP Kit	60.30
1210	The Cat - R.T.R.	134.00
1410	Fiero GTP - R.T.R.	134.00
1610	Bullet — R.T.R.	183.31
	HIROBO	
HCTOMCAT	Tomcat 2WD	92.39
<b>HCZERDA</b>	Zerda 4WD	104.99
HIRC1000	Jealously 4WD	376.31
HIRC1001	Invader 4WD	174.71
HIRC1002	Alien SS	147.83
HIRC1003	Peugeot Turbo	194.87
HIRC1004	Toyota Celica	194.87
HC-10	Bearcat 2WD	48.77

FOR ALL YOUR R.C. CAR NEEDS

Item No.	KYOSHO	Price
KJ1617	Turbo Ultima	187.48
KJ1618	Ultima Pro	192.17
KJ1621	Optima Mid	174.99
KJ1622	Turbo Optima SE	237.48
KJ1605	Big Brute	95.99
KJ1604	Double Dare	163.19
KJ1606	High Rider Vette	95.99

#### **ACCESSORIES**

JR Propo Novak JG Manufacturing Deans Nav-Com Team Losi Racing Scale Sport **B&R** Motor Works Sanyo Aristo Craft **Robinson Racing Products Custom Works** And Many

VISA



More to Come!



PRICES SUBJECT TO CHANGE WITHOUT NOTICE

	MIRACLE SPEEDWAY  Formance Products  Track Pro	oven Reliability
Grasshopper Hornet Lunch Box Pajero Midnight Pumpkin Rock Buster	Bullet Proof Diff. Kit	thening Kit\$5.9 eat for Monster Trucks Tool) ing Kit\$6.9 & Balls) nt & Lowering Kit\$12.9
Road Runner Lazer	Kits fit cars named to left. Instructions included, kits can be adapted to other cars with similar parts.  RC ''10'' OWNERS AND RACERS  ROUND RO	Dealer & Distributor Inquiries Welcome. Please Call For More Information & Catalog.
	Double Ball Bearing Diff. Tube Support Kit\$22.95 Smooth & Strong Trans. Tech Tips Included! With Shims and Short Spring)	Miracie Speedway
☐ New RC-10	Quick Change Lowering Kit\$12.95 On-Road in Minutes or Vice-Versa with Original Shocks.)	300 Pheasant Drive Kalispell, MT 59901

## SIDE-DAM TECH

(Continued from page 144)

and nuts are good for this; otherwise, you'll go through a ton of tape in a racing season.

To make sure the side dam stays on in a wreck, use two thin strips of Lexan with one end attached at the top of the wing and the other attached on the deck of the body. To ensure stability, the two strips should be spread apart as far as possible, i.e., one at the front of the side dam and the other at the back. Be careful to mount the side dam and support strips as straight as possible. To make the car's handling consistent, the side dam should be perpendicular to the track surface, and it should not be twisted.

The rear spoiler has a major effect on

the car's handling, but it's much simpler to deal with than the side dam. The spoiler controls how the car enters and exits the corner, while the side dam effects the car when it's actually in the turn. The larger the spoiler, the more push or understeer the car will experience. If you have to let off the throttle going into the turn to prevent the car from "pushing"

(Continued on page 170)



variflow dampening device. As your shock compresses the Jump Jet gradually restricts the flow of oil via a tapered needle. This allows you to glide over small bumps as well as not bottom out while entering, exiting or landing from a large jump. You'll wonder how you ever drove without 'em! Jump Jets will work in Associated, Kyosho and other popular shocks.

For catalog send \$2.00 to Paragon Racing Products Dept CA, 690 Industrial Çircle South, Shakopee, MN 55379, (612) 496-0091 FAX: (612) 496-0191

Patent Disclosure Document Submitted



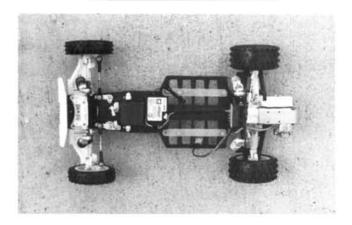


The R/C car industry is rapidly advancing, with new products being offered at a head-spinning rate. So, I'll make manufacturers nervous, but feed you R/C squirrels who are hungry for info, by bringing you a special report on security leaks and "late-in" items. Here goes!

# THE PROFESSOR DECIDES!

Professor Ginz of 917 Sanborn Ave., Los Angeles, CA, introduces the Drag Timer-a modular timing system designed for R/C car racing. The system consists of five components: Christmas tree; foul light; elapsed time/reaction time readout (reads to one hundredth of a second); mph timer (reads to one thousandth of a second) and a bracket handicapper. This contraption should keep fighting on the track to a minimum!





#### **FACTS HOT OFF THE FAX**

It looks as if cowboys get no rest! The Traxxas dudes from Texas are at it again! Here is a photo of a Bullet after the graphite treatment. By the time you read this, the graphite chassis, shock towers, onepiece wheels and dirt spike tires will be available for the Bullet—all from Traxxas. I'm told that the rear suspension arms are from RPM and that fronts are also available.



#### **BLIZZARD BUSTER**

Here's a picture of a Tamiya Clod Buster struttin' its stuff with the prototype snow plow from ESP of Crystal, IL. It has a servo-operated 13-inch blade, a quickly detachable mount and a replaceable wear strip. This setup is scheduled to be in production shortly after you read this; just in time to clear the off-road track when the snow flies.

#### **KO RADIO BLITZ**

It seems that Global Hobbies is betting big-time on the KO line of pistol radios. An all-new speed controller—the CX-IV forward/brake controller—will replace the discontinued CX-II and will be included with some of the new competition-oriented pistol radios. This unit boasts 10 Mosfets to handle modified-class motors.

Global will import the competition EX-I pistol radio in two new configurations. The standard version will include mini receiver and two of the new high-speed ball-bearing servos. The EX-I On-Road Race will feature a mini ballbearing servo and the CX-IV speed controller. The EX-I Off-Road Race will include the PS303 FET 70- to 80-ounce thrust servo, which, according to Global, is the "fastest servo in the world," and it will also include the CX-IV speed controller.

#### BULLET OFFSHOOT FROM THE LONE STAR

While many have been keeping their eyes on the promising Bullet from Traxxas Corp., the Dallas boys have been working on the Radicator, which is a ready-to-run econo-version of the Bullet. It's reported that this off-road is basically very Bullet-like with a plastic chassis and a three-step mechanical controller in place of the Bullet's electronic unit. The car does, however, have oilfilled shocks-probably plastic, although we haven't been able to determine for sure, and it also has a pistol-grip radio like the Bullet's. The Radicator will be available in fluorescent colors, and these are a big improvement over the Bullet's medium red, white and mustard yellow.



#### **ROBBE MAIL-ORDER?**

If you've wanted one of those scale Robbe Testarossas or Porsches, but have had trouble getting one through your local hobby shop, catch this: Robbe is going mail-order, just like Tower and Hobby Shack. Its toll-free line will be 1-800-JC ROBBE. Caught me by surprise, too!

(Continued on page 167)

## **INSIDE SCOOP**

(Continued from page 164)



#### INTERIOR DECORATING

McAllister Racing, the body builders, of Simi Valley, CA, now have a complete, molded one-piece interior kit for your 1/10-scale stock car. The detailing includes: dash panel, fire extinguisher, crash bars, shift knob and driver figure with detachable helmet. The base is molded so that it's large enough to be trimmed to fit most popular 1/10-scale stockcar bodies, and a GTP version is also available.





# WHY CAN'T WE GET ONE OF THESE?

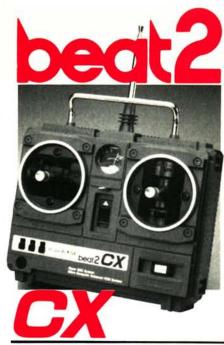
I recently received a letter from Stephen Goh of NIKKO, Singapore, who wrote about the NIKKO Brat. Stephen writes, "Here are two photos of NIKKO's latest belt-driven model, the 4WD Brat. Are these of interest to you? Features include; one-piece carbon-fiber graphite chassis, three and four gear differentials, front and rear respectively, aluminum shocks, and more." Mr. Goh continues,

"This model has been successful in races in Japan and Singapore, and it will also participate in the IFMAR Championships in Sydney, Australia."

Stephen, to answer your question: We're very interested in all NIKKO's new products. Unfortunately, all our attempts to secure a test sample have met with no response from the company. Can you tell me why?



Keeping the industry BUGGED, I'll see you next time-or sooner, if I catch you in my spyglass! CC





# 2 Channel Racing Excitement!

Command the roadways or the waves with the *Beat 2 CX*. Pulse Code Modulation (PCM) makes it possible to select a fail safe system that will help to protect your model in the event of signal loss or interference. Incorporate this with servo reversing for both channels, and you have a versatile system at affordable pricing.

No frills, just pure, solid performance. Quick frequency changes are as easy as grabbing optional crystals (27 MHz), making it easy to be ready for any challenger. Each Beat 2 CX is equipped with an ABC&W<sup>TM</sup> receiver, two 507 servos, switch harness, and battery case. Take command with the Beat 2 CX2 channel radio system - JR quality at its best!

Available now through your local hobby dealer at yesterday's prices.



P.O. Box 3726 Champaign, IL 61826-3726 Phone 1-800-458-0241 FAX 1-217-355-0058

THE Electric R/C Car Specialist

(914)268-5090

FAX (914)268 0462

OVER 100 Companies stocked

DEALERS ONLY!

Advanced x2 A&L Airtronics Andy's Aristo-Craft Ascot Associated Astro Fligh Autographics Big Boy Toys Bud's Blue ribbon Bolink Bondhus Black Magic Checkpoint Cheetah C&M CMW Cobra CRP Five Star Composite Craft Delta Dahm's Dan's De Dialed Dubro Edge

ine Design Gonzo Great Grease Hot trick touge Hyperdrive Kimbrough KO Propo Lazerlite KRP KSC Lightspeed Litespeed osi Max Industries McAllister MCS MIP MPE Morgan MRP NMB Norcal Novak

Pitstop Power Pak ProLine **ProCut** Progressive Tech. ProShop Protech Protrack Ram Raceco Racemaster RacePrep Racing Silks RC Performance Spec. Revtech Rockbusters RPM Stage III Rochester Rcwy. Robinson Racing Sermos Shinwa Shadow Master Solder it S.T. (skis Speedworks SRS T&A Tekin Thoro Feam Hammer TM TMS Track Master Traxxas Twirn-K Twister UE Ungar Victor WSS, Inc. Zeta

50 NORTH HARRISON AVE., UNIT #14, CONGERS, NY 10920

Pactra Paragon Parma

Peak Performance

Performance Plus

NEW **COMPANIES** 

BPP Aerotrend Bruline B&R Cam CSC J-Car Minitech Miracle Speedway Redline Stormer Tecnacraft VRP

If you do not see it here just ask.

#### ARE YOU LOOKING FOR ...?

- Stronger JRX2 front A arms (RPM, Dialed),
- Titanium rear axle 10L T&A,
- Complete J-Car tranny for JRX2 &RC10.
- Hyperdrive RC10 extended motor plates,
- Delta 1/10 &1/12 gold dots,
- TRC red, gold & silver dots,
- Twinn-K black dots,
- Team Hammer T-shirts,
- Agitator front ends for your 10L, Bolink, Pro 10 or predators,
- 11. Bulk truck tires.

Then ask your local hobby shop to call (914)268-5090

## SIDE-DAM TECH

(Continued from page 162)

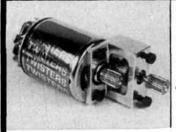
toward the outside of the track, your spoiler is too large. If, on the other hand, the car spins out, is loose, or oversteers, the size of the spoiler should be increased. As a general rule, start out with a 1-inch spoiler and work from there.

Ordinarily, 2WD cars need larger side

dams and spoilers than 4WD cars. ROAR rules limit the side-dam size to 14 inches long and 51/2 inches high. The spoiler cannot exceed 11/2 inches (including the molded-in spoiler). Both the length and position of the side dam and spoiler require some track time to figure out just what you need. It might be a good idea to have a number of different-size side dams and spoilers so you can try various combinations. You don't want to cut the side dam down too far and then not be able to use it at all.

I hope that this information helps to remove the mystique that surrounds the whole dirt-racing experience, and I'd like to thank Jerry Landgraff for his valuable

(Continued on page 172)



## 2 TO 1 TRANNY

Gear Reduction Transmission, Fits TRC Pro-10, Eliminator 10, Predator, Villan GP10, Shadow 2 + 2, Viper Outlaw, 2 + 2, Infinity- 10, VicFor and others

Part #1900 \$4795

Part #1901 \$39 95

PA DYNO

Fully Assembled and Calibrated, 1 piece unit, and comes with slave motor. Measures RPM & AMP Draw, 3 Different Load Settings, Uses your digital volmeter to give more accurate readings, and Re quires a 4.8-8.4 volt battery pack and a digital voltmeter for operation. Includes clear concise in struction and Dyno test results sheet to log your

\$9995



### 4 TO 1 CLODBUSTER TRANNY

Gear Reduction Transmission for Clodbuster, Blackfoot and fits others. Di-rect bolt on to the Clod Buster and Blackfoot gearboxes.

PART #2000

INTRO \$4Q95



12 Lbs MODEL PS25 25 AMP

4.5-15 Volts, 19 Lbs.

35 AMP 10-15 Volts 24 Lbs

MODEL PS20 12 VOLT 20 AMP

\$19900

#### **Dial Racing Products** SPEED CONTROLS

DRP 90 Econo..... List \$89.95.... NOW \$52.95 DRP 204 Reverse. List \$159.95... NOW \$94.95 DRP 306 Performer List \$169.95... NOW \$99.95 DRP 360..... List \$199.95.. NOW \$118.95 State Receiver Plug Style When Ordering

DEALER INQUIRIES INVITED

Glasgow, MT 59230 USA 1 Garden Terrace

(406) 228-4569

# BIG BOB'S BODACIOUS TIRE BONANZA

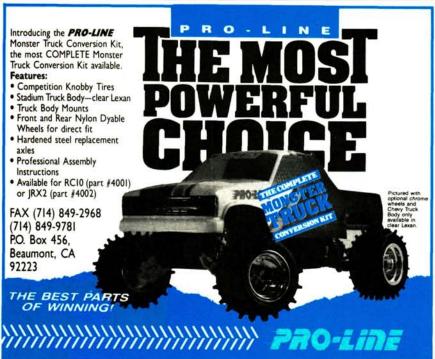
1/10 On Road, TRC, BBS Wheels Glued & Trued - Blues, Greens, Yellows FRONTS: \$15.00 pair NOW \$9.95 Pair REARS: \$18.00 pair NOW \$12.00 pair

1/12 on Road Tires, TRC, Deltas, Glued & Trued - Blues, Greens, Yellows FRONTS: \$10.00 pair NOW \$6.95 pair REARS: \$10.00 pair NOW \$6.95 pair

# MATCHED SANYOS

\$26.75 4 Cell SCR.....\$21.00 4 Cell SCF Cell SCE.....\$39.75 6 Cell SCR.....\$31.50 7 Cell SCE.....\$46.25 7 Cell SCR....\$36.50









Country Club Plaza Beverly-Rancocas Road Willingboro, N.J. 08046

(609) 871-9440

## SIDE-DAM TECH

(Continued from page 170)

input.

\*Here are the addresses of the companies mentioned in this article.

Custom Works R/C Products, 3720 Easton Dr., Suite 6, Bakersfield, CA 93309.

Parma International, 13927 Progress Parkway, North Royalton, OH 44133.

## DIRT OVAL MOTORS

(Continued from page 106)

wise (15 to 17 turn). If you can keep your speed going into a turn, you don't need a great deal of acceleration coming out the other side, and a hotter motor with a fewer number of turns would just burn up more juice than is necessary.

A shorter track that requires some serious braking to get through the turn might require a stronger motor with a low wind count (12 to 14 turn). This will allow you to gain back the speed you lost going into the turn in a shorter period of time. In addition to the size of the track, you must also consider the texture of the surface. Tracks that are composed of soft dirt, where the tires have to push their way through, will require a stronger motor (low number of turns). If the track is rough and infrequently groomed, you may want to get a milder motor with a higher number of turns. It's best to get around the track safely at a slower speed, than at blistering speeds with frequent crashes. (You've heard the story about the tortoise and the hare?)

Your Driving: One of the most commonly made mistakes when choosing a motor is buying what the fastest guy at the track is running. The motor he's running is obviously very good or he wouldn't be turning the fastest lap times and ultimately, winning races. But, this is a case of the motor matching the car, driving style and ability. The motor that may be working the best for one person could be someone else's headache. Polish your driving skills first with a milder motor before you wrestle with a motor that may be too hot to handle.

Motor Set-up: Once you've given it some thought and picked the right motor, there are some basic motor tuning tips that will keep your motor running at its best.

For dirt-oval racing, heavy springs with medium to medium/hard brushes are recommended. The heavy springs allow for stronger acceleration, and they keep the brushes from bouncing off the commutator when running at the high rpm common in oval racing. The harder brushes

(Continued on page 174)



# PRECISION GEARS

Made with **Delrin**\*

#1000-\$7.95

(+53 shipping and handling witin U.S.)

Made with Delrin Teflon\*

#2000-\$9.95

(+53 shipping and handling witin U.S.)

Also available... 48 Pitch SPUR Gears, Pinions, Body Posts, and others!

Trademark for Acetal Resins Made by Du Pont N.Y.S. Residents add 7% sales tax.



Make check or money order payable to:

R.C. USA Inc.

P.O. Box18050, Rochester, NY 146 716-461-0716

C.O.D.s ACCEPTED

# DIRT OVAL MOTORS

(Continued from page 172)

are recommended because they can endure the beating they receive during a race. However, using the hardest brushes isn't recommended. Hard compound brushes will last the longest, but they're more likely to glaze and cause the brushes to bounce if the commutator is not perfectly round. Some racers prefer using a softer brush for a little more low-end punch, but, for optimum performance, they have to be replaced every one or two runs.

Just keep in mind that there's no "perfect" oval motor. Setting up your car properly and polishing your driving skills should be your concern, rather than buying the fastest motor and hoping it will do the work for you. It won't happen. But, once you get some time in on an oval track and have an idea how to adapt to certain track conditions, choosing a suitable motor should be the next step, and these general guidelines should point you in the right direction.

\*Here's the address of the company mentioned

Revtech R/C Products, 7401 White Lane, #19, Bakersfield, CA 93309



# **DIRT DIGEST**

(Continued from page 142)

you can, and should, take, especially if you're running a car or truck with an open chassis.

Just to keep you informed, ROAR no longer includes an approval process for off-road bodies. They've proliferated at such a rate (the bodies, not ROAR) that it's become impossible for each particular body style to get an individual stamp of approval. It's a tough problem, so ROAR's solution was to give a blanket "wink and a nod" to any body that re-

sembles a generally accepted off-road vehicle.

As a long-time viewer of off-road events (including MT Stadium racing and Pike's Peak), I want to thank ROAR for letting me now use all those Porsche, Chevy, Toyota and Honda bodies I've been collecting over the years. They've all competed in off-road events, so that makes them acceptable, right?

Until then, keep those cards and letters coming in to "Dirt Digest" in care of *R/C Car Action*. Bob gets lonely when you don't write and starts polyurethaning wood to occupy his time. I'm tired of

sticking to my chair (or slipping out of it when it dries), so drop him a line. (By the way, the missing spring and chassis screw just showed up; they were mixed in with a dust ball that was stuck under my chair!)

\*Here are the addresses of the companies mentioned in this article:

MRP, 18676 142nd Ave. NE, Woodinville, WA 98072.

Futaba, 4 Studebaker, Irvine, CA 92718.

Royal Products, 790 West Tennessee Ave., Denver, CO 80223.

# TRACK DIRECTORY

In keeping with our constant efforts to help foster the growth of the radio-control car hobby, we've decided to run this track directory intermittently to inform modelers where they can race and exchange ideas. If you'd like your track listed, send us your name, address, phone number and some information about the track to R/C Car Action Track Directory, 251 Danbury Road, Wilton, CT 06897. We'll list as many clubs as space allows.

#### NORTH DAKOTA

#### BUFFALO CITY ROAD RUNNERS R/C CLUB

Jamestown, 58476 Randy Lynn (701) 285-3353 Gene Martin (701) 252-3941

#### WILLISTON OFF-ROAD RACERS

115 W. 2nd St., Williston, 58801 Jim Basaraba (701) 572-9313

#### NORTHERN MINI-RACERS

P.O. Box 415, Minot, 58702 Roger Lee (701) 838-0654 or 839-5294

(Continued on page 178)

# Wanna Go Really FAST?

USE WHAT THE PROS USE:

**Pyramid PS-25 Power Supply** 

Adjustable from 4.5 to 15V Works great with

**Bud's Motor Analyzing Dyno** 

and

**Competition Electronics Turbocharger** 

\$199.00

\$129.95

\$49.95

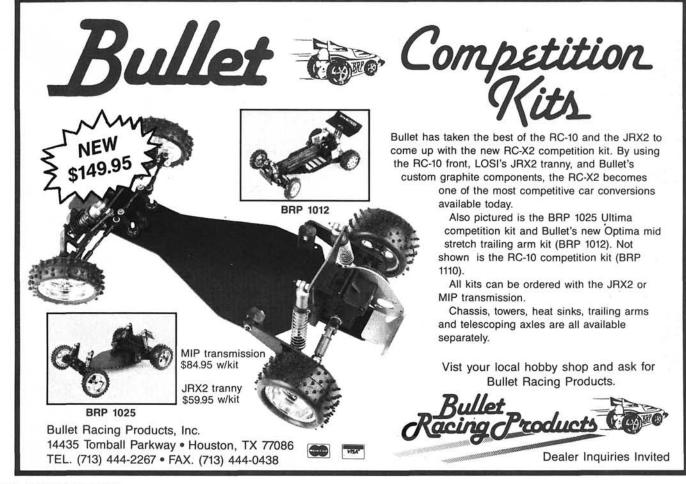
### ALCRAFT

P.O. Box 297 1370 Custer - Orangeville Road Brookfield, Ohio 44403

Visa M/C Accepted - Ohio residents add 5% - Prices subject to change



HOME OF R/C RACEWAY (216) 448-1573





# Space



Technologies, inc.

RC Racing Products For the Serious Racer

# NEW!! Rubber Capped Sponge Tires

Suggested Retail \$37.50 pair

- # 1340 Designed for Abrasive tracks where wear is a problem.
- # 1230 Designed for normal tracks, modified motors, daytime use.
- # 1220 Designed for normal tracks, stock motors, indoor or nightime use.
- # 1120 Designed for cool tracks or where traction is a problem.

Available widths: 1.125", 1.30", 1.50", 1.75", 2.0"

**Pro Bearing Hub** Adapter \$1.80 pr. included free for limited time with purchase of front tires.

**Our Unique Foam Tire Traction Compound** 

- Not a softener
- Not a Glue
- Improves Traction
- · Resists Chunking

Total New Concept \$5.95

Distributed by: REMOTE HOBBY DISTRIBUTORS

Two Notch Road, Columbia, S.C. 29223 803-736-9446 9005-C

NOW OPEN! Indoor Carpet Racing, Oval & Road Course, Columbia, S.C.

# TRACK DIRECTORY

(Continued from page 176)

#### KOUNTRY KILN HOBBY

Box 247, 324 Railroad Ave. N., Mohall, 58761 Stan Witteman (701) 756-6307

Bismark

Bruce Herman (701) 258-3802

#### VALLEY HOBBIES

Fargo Bill Neuhauser (701) 235-1272

#### OHIO

#### JOHN'S HOBBY SHOP & INDOOR OVAL ASPHALT TRACK

120 South 6th St., Zanesville, 43701 (614) 455-3025

#### ALCRAFT'S R/C RACEWAY

1370 Custer-Orangeville Rd. P.O. Box 297, Brookfield, 44403 Larry Jennings (216) 448-1573

#### NORCAR

3614 Beyerle Rd., Cleveland, 44105

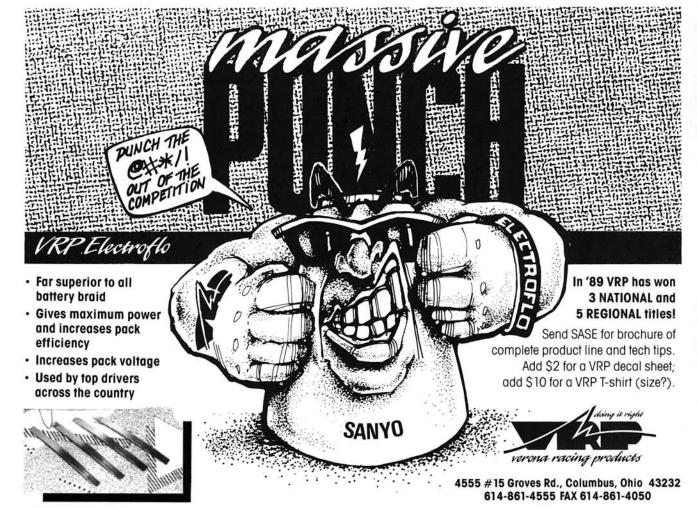
#### C.O.R.C.A.R.

1775 Bairsford Cir. W., Columbus, 43232 John White

#### NORCAR

848 Wilder Ave., Elyria, 44035 Chuck Mackin (216) 365-6562

(Continued on page 180)



# Get On The Right Track...

#### Where else can you find an indoor track that has so much going for you?

- · 270-ft carpeted oval/roadcourse!
- Absolutely no restrictions on tire compounds!
- AMB Computerized lap counting system!
   ROAR-affiliated! ROAR track rules!
- . Entry fees: \$5 for members, \$10 non-members!
- 3-hr. track rentals Sat., Sun., and Weekdays!
   Membership \$25/year. Entitles you to 10% off parts and ½-price race entry fees.

Count on us to keep you in the winner's circle! We carry one of the largest selections of R/C parts and accessories anywhere, and we beat most advertised catalog prices. Whatever you're into, we're the only supplier you need!

#### **RACE SCHEDULE**

Mon: 2WD Monster Trucks, Stock & 6 cell Mod. Conversions Tues: 1/10 Off-Road Stock Wed: 1/10 On-Road. Stock NASCAR, 6 cell Modified GTP Thurs: 4WD Trucks Open, 4WD Cars Open,

1/12 On-Road Stock 6 cell

### ISLAND HOBBIES & RACEWAY

111 Bridge Rd., Hauppauge, NY 11788 516 234-7428 • 1-800-344-9225

# R/C WORLD HOBBY CENTER INC.

9110 5th Ave. Brooklyn, NY 11209 (718) 921-2160

# "Brooklyn's First Indoor Carpet Track"

ONE STOP RACING FACILITY WITH COMPLETE HOBBY SHOP ON PREMISES.

WE USE THE "AMB" COMPUTERIZED LAP COUNTING SYSTEM.

Only odorless tire dressing allowed.

Open Wednesday thru Saturday 2 pm to 10 pm and Sunday 11 am to 7 pm

Please call during business hours for full racing schedule.

# TRACK DIRECTORY

(Continued from page 178)

#### N.W. OH RADIO-OPERATED DIRT SPRINTS

906 Eton Rd., Toledo, 43615 Herb Zieman (419) 531-0070

#### TOLEDO AREA R/C AUTO RACING

Toledo

Brent M. Gottfried (419) 666-9585

#### F.F.A. SPEEDWAY

Wayne County Fairgrounds, Wooster 44676 (216) 264-1848

#### MARTEL R/C AUTO RACEWAY

4271 Main St., Martel 43335 Randy & Peggy Swihart (419) 845-3172

#### RICHLAND COUNTY RACEWAY

South Illinois Ave., P.O. Box 2328, Mansfield, 44905 John Rine (419) 589-RACE

#### **OKLAHOMA**

R/C AUTO RACING OF TULSA Dave Cole (918) 745-9898

#### OREGON

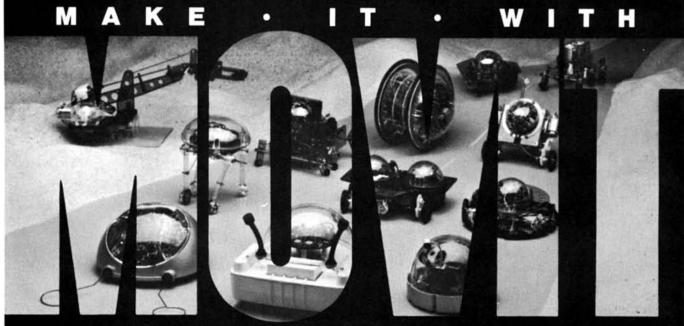
#### YAMHILL COUNTRY R/C CAR CLUB

Yamhill County Fairgrounds, McMinnville President Garry Elwell (503) 538-9596

#### R/C SPEED CENTER

2810 N. Pacific Hwy., Medford, 97501 Gene Skelton (503) 779-8298

(Continued on page 182)



### Educational Electronic Robot Kits

An exciting innovation in the world of hobbies, the MOVIT series of robot kits combines the simple joy of traditional plastic models with the sophistication of modern electronics. All of the MOVIT kits will delight children and adults, while demonstrating that modern technical wizardry can be playful too. The parts are of high quality and the instructions are clear. All of the MOVIT robot kits feature pre-assembled PC boards. Ages 10 and up.

Canadian Distributor: Mitsutani International - (604) 984-2421

JOIN THE MAKIT WITH MOVIT CLUB TODAY!

#### **OWI Incorporated**

1160 Mahalo Place Compton, CA 90220 213.638.4732 FAX: 213.638.8347

See us at booth 1429 at the Chicago Model Hobby Show



NEW LINE OF CLODBUSTER PRODUCTS FROM ESP

(R. Residents Add 61/1% Tax) \*Outside Continental U.S. Include 6.00 Postage & Handling Send Check or Money Order with 2.00 Postage & Handlin

RACING SUSPENSION KIT With Oil Shocks \$69.95 SUSPENSION STABILIZERS \$8.95

ALUMINUM CHASSIS BRACE \$10.95 COMPLETE CLODZILLA RACING KIT

\$84.95 CLODZILLA RACING MOTORS - 40,000 RPM CLODZILLA RACING BEARINGS .... \$54.95

CLODZILLA RACING TIRES... Pr..... \$19.95



SUSPENSION LIFT KIT Increases Travel .... .\$10.95 FRONT BUMPER w/Brushguard H.D. Solid Aluminum .....\$24.95 TWIN TUBE REAR BUMPER All Aluminum Construction...... ALUMINUM WHEEL DISCS Direct Bolt On Set Of 4.....\$29.95

> ESP MANUFACTURING 7105 Virginia Rd. Erystal take, IL 60014

> > (815) 455-5440



# TRACK DIRECTORY

(Continued from page 180)

#### RADIO CONTROL CAR CLUB

P.O. Box 7053, Beaverton, 97007 Ron (503) 649-7862 or Steve (503) 254-5219

#### WHEELING RADIO ELECTRIC CAR KLUB

Rt. 4, Box 117A-12 Milton Freewater, 97862 Don Rudy, Secretary

#### HILL HOPPERS HOBBY SHOP & INDOOR TRACK

2327 10th St., Baker, 97814 Bob Weber/Tom Lager (503) 523-6081

#### PENNSYLVANIA

#### BUCK R/C SPEEDWAY

946 Buck Rd., Quarryville 17566 Tim Evans (717) 786-1850

#### CRESSONA MALL SPEEDWAY

Rt. 61, Pottsville, 17901 Elmer Kramer (717) 622-9728

#### SUSQUEHANNA R/C AUTO RACING

Susquehanna Valley Mall Dave Bailey (717) 374-4053

#### RACE-WAY HEAVEN HOBBY SHOP AND RACING CENTER

2007 S. Juniper St., Philadelphia, 19148 Neal Evers (215) 271-5600

#### PHILLY R/C RACERS

7790 Dungan Rd., Philadelphia, 19111 Bernie (215) 831-1835

#### COUNTRY SIDE R/C RACEWAY

1057 Waterman Rd., Clairton, 15025 Fred (412) 653-3529

#### COCHRANTON AREA RACE CLUB

120 W. Adams St., Cochranton, 16314 Harry Turner (814) 425-7788

#### DENWICK R/C HOBBIES & RACEWAY

14961 Buchanan Trail E., Blue Ridge Summit, 17214 (717) 794-5184

(Continued on page 191)

# BUILD YOUR OWN R/C CAR FROM SCRATCH!

PROFESSIONAL BLUEPRINTS AVAILABLE FOR THESE HOT CARS!



### SPRINT CHARGER

Scratch-build your own 1/10-scale electric asphalt/carpet outlaw sprint car. This super-light sprung chassis is constructed of flexible music wire and features a changeable wheelbase that allows the use of many body styles. The Charger is fast and maneuverable.

# DUSTER

Get in on 1/10-scale carpet or on-road action inexpensively with this plan of Eric "Von" Goldschrafe's Duster 540. This car weighs less than three pounds and is constructed of epoxy/fiberglass board and aluminum. Use almost any running gear and suspension left over from junk 1/12- and 1/10-scale cars. Full-size templates make cutting out the chassis easy.

For each blueprint, send check or money order for \$9.95 plus \$1.75 for postage and handling. Foreign payment (including Canada and Mexico) must be made in US funds and drawn on a US bank, or by international money order. Send to

Radio Control Car Action Plans, 251 Danbury Rd., Wilton, CT 06897. order. Send to:



# TRACK DIRECTORY

(Continued from page 182)

#### VALLEY FORGE R/C RACING ASSOC.

Suite 900, One Franklin Plaza, Philadelphia, 19102 Howard Finkelman (215) 563-4800

#### THE PIT SHOP

814 Thompson Run Rd., West Mifflin, 15222 Don Fisher (412) 462-1277

#### MARS R/C RACEWAY

Wildwood Hobbies Inc., Rd. No. 7, Box 178, Mars, 16046

Jim Schwadron (412) 625-1550

#### MONTGOMERYVILLE DIRT TRACK

980 Rt. 309, Montgomeryville, 18936 Dave Cowan (215) 885-3947

#### COLUMBIA COUNTY R/C

225 W. Bruglar Ave., Bloomsburg, 17815 Sally Keys, Secretary (717) 784-2462

#### CITY LIMITS R/C RACEWAY

7201 Saltsburg Rd., Pittsburgh (412) 793-7344

#### OFFROADERS OF ALTOONA R/C CLUB

RDS Box 946, Edison Ave., Altoona, 16601 Chuck Meyers (814) 946-0193

#### TC's R/C's

1537 Freeport Rd., Natrona Heights, 15065 Tom & Nancy Coriale (412) 226-8802

(Continued on page 192)

#### CLODBUSTER "4000 MAH" BATTERY PACK

7.2 & 8.4 volt packs avail

#### CLODBUSTER CHASSIS SAVER KIT

#### STAINLESS STEEL BEARING KITS

· For Tamiya, Associated, Kyosho, Marui and others

> See your dealer first. If not available call direct.



31 Nichols St., Ansonia, CT. 06401-1106 Phone: (203) 734-0600... FAX#: (203) 732-5668

### ATTN. CLOD BUSTER AND OTHER TRUCK OWNERS NEW! CUSTOM ACCESSORIES FOR YOUR TRUCKS

CUSTOM ALUMINUM and BRASS ACCESSORIES for your trucks direct from the manufacturer. All parts come highly polished for a show chrome or show brass look, just specify ALUMINUM or BRASS on the order form.

Over 80 Items available. THOUSANDS OF PARTS IN STOCK.

Here are just a few of our items that we offer:

Single Roll Bar
Double Roll Bar Light Kit
Diamond Plate Bed Covers
Side Body Guards "single"
Skid Bars "square"
Skid Bars "round"
Bumper Guides
Aluminim Rims

Aluminim Rims

Clod Warrier Front and Rear Bumper w/Ball Hitch

Send \$2.00 for our fully detailed catalog on each of our items to: A.P.M. CUSTOM HOBBY INC. DEALER INQUIRIES P.O. BOX 357

WELCOME

Clod Front Bumper "square or round" Clod Rear Bumper "square or round" w/Ball Hitch Lunch Box Rear Bumper w/Ball Hitch

Lunch Box Rear Bumper w/Ball Hitch Paruiser Front and Rear Bumpers w/Ball Hitch 2 pc. Fuel Injection Stacks 1 pc. 30 deg. Fuel Injection Stacks Truck Puller Organ Stacks Clod Buster Frame Reinforcer Kit Clod Front End Operational Tilt Kit

Dual Wheel Adapter Kit Trailers, Diamond Step Plates and A LOT MORE... ALSO A FULL LINE OF R/C COMPETITION BOAT ACCESSORIES

DUMONT, NEW JERSEY 07628 (201) 387-2908

#### DID YOU EVER WANT TO OWN YOUR OWN R/C HOBBY STORE ? NOW IS THE TIME

**BE A PART OF** 



#### "THE R/C CAR STORE"

We offer a complete turnkey package including inventory, training, fixtures, and ongoing support.

For more info write or call: PERFORMANCE HOBBY, Inc. 9135 W. Judge Perez Drive P.O. Box 1732 Guy....(504) 271-5022

racing systems inc.

#### 2-Speed Transmission

- Shifts Automatically
- Adjustable Shift Points
- 15 Gear Combinations



R.O.A.R. Approved Stock & Modified Motors

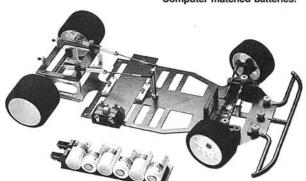


Computer matched batteries.



#### Pro Stock shown, Funny Car also available.

Our car is Cad Cam computer designed to be a Drag Car from day one, not a strip of fiberglass with four tires. The chasis design places the weight of the component parts of the car so that it has the same positive effect on handling that you will find on a full size Drag Car.



#### Shadow Q.C.

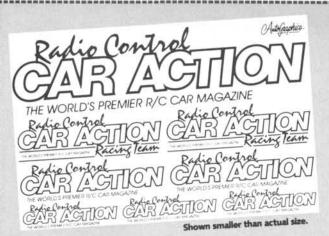
The Shadow Q.C., short for quick change, is the newest addition to our championship line of on-road R/C car kits. This car has already reset track records previously held by the **Shadow 2+2.** 



Lazer Lite has Top premium 900ma Drag cells, 1200ma, and 1700ma computer matched cells. Last but definitely not least, the hottest legal motors, for both Drag and Street cars, that are available today.

2090 S.W. 71st Terrace • Unit H9 • Davie, FL 33317 • 305 473-8587 • Fax 305-424-7799

Photos and Design by BRACKETT



# R/C Car Action Decals!

By popular demand we now have 4"x6" sheets of assorted Car Action Decals for your R/C Car. These high quality pressure sensitive decal sheets come in 5 different colors: Black, Red, White, Gold and Blue. Each Color sheet is \$2.00 and this includes postage & Handling. Send check to:

R/C Car Action Decals, 251 Danbury Road, Wilton, CT 06897

# TRACK DIRECTORY

(Continued from page 191)

HENNING SCALE MODELS R/C SHOP & RACEWAY

128 S. Line St., Lansdale 19446 (215) 362-2442

#### RHODE ISLAND

TRI-STATE RACEWAY 647 Hartford Pike, Rt. 101 Scituate, 02857 Ray Dean (401) 738-4908 Bob Gagne (401) 722-9320

#### SOUTH CAROLINA

MIDLAND MINI SPEEDWAY & HOBBY SHOP

Rt. 5, Box 72G, Sumter, 29150 (803) 495-2006

#### WILLOW GROVE MINI SPEEDWAY

Rt. 3, Box 57, Florence, 29501 (803) 669-1695

#### WHEELS & WINGS

727 E. Buena Vista Ave., North Augusta, 29841 James Bond (803) 278-0531

#### TENNESSEE

R/C RACING OF MIDDLE TENN.

300 Tanglewood Dr., Mt. Juliet, 37122 Brad Norris (615) 754-7093

#### TEXAS

CAPITOL R/C RACEWAY

South Chisolm Trail Dr., Round Rock Mickey Higgs (512) 244-7843

COASTAL BEND SANDBLASTERS

Bill Witt Park (Yorktown Rd.), Corpus Christi Pete Broadway (512) 992-4448

(Continued on page 194)



ACTION-MAGS "The Re-invented Wheel"

ACTION-MAGS®

# "Custom wheels without the custom price."



With the use of our unique adapter system, Blackfoot or Lunchbox Action-Mag® wheels, with original tires, can be installed on other vehicles to give the "monster truck" appearance.

Add traction, stability, appearance and performance by using our original Action-Duel-E<sup>\*\*</sup> all-aluminum dual rear wheels for the Clod Buster, Blackfoot, Monster Beetle, Bruiser and Lunchbox. Action-Mags®—single all-aluminum wheels—are also available for today's most popular monster trucks. We ship C.O.D. and also accept M/C and

For a brochure and price list, send \$1.00 to: **Design Ingenuity Enterprises, Inc.** 9420 Lazy Lane, Suite D-9 Tampa, FL 33614 Call or FAX (813) 932-7650



Also available:

- spacer kits to assemble dual plastic rims
- aluminum Action-Mags<sup>®</sup> for racing slicks from 34-inch wide through 3-inches wide
- racing slicks and road tires
- bug shield
- fox extended front axles

# TRACK DIRECTORY

(Continued from page 192)

VICTORIA HOBBY SHOP & RACEWAY 5211 John Stockbauer Rd., Victoria, 77904 Erwin Rather (512) 575-3270

ARROW HOBBIES

2710 So. 1-35W, Burleson (817) 295-2821

RIO GRANDE RACERS El Paso Jerry McGinnie (915) 591-9271

**I&I HOBBY CENTER** 6707 Chimney Rock, Bellaire, 77401 Issac Ben-ezra (713) 661-2270

EL PASA CAN AM

3109 Jarvis, El Paso, 79935 Bob Blum (915) 593-8015

HAL'S HOBBY SHOP & RACEWAY

4886-A Hercules, El Paso, 79904 Carlos Premier (915) 755-1914

K & W RACEWAYS Hard Rock, Grand Prairie Matt Hafer (214) 986-5063

CHECKERED FLAG R/C RACEWAYS

8100 S. Kirkwood Rd., Houston, 77072 (713) 879-7619

OUTBACK OFF-ROAD

Market St. at Akron, Jacinto City (713) 673-5911/675-7938/455-2893 LITTLE INDY

1624 S. Houston St., Hwy. 146 S. Livingston, 77351, (409) 327-2303

TEXAS SPEEDWAY

6707 Chimney Rock, Bellaire, 77401 John Gebhart (713) 661-7137

T&T SPRINTERS, T&T R/C CARS

151 W. Spring Creek Pkwy., Plano, 75023 Ron/Karen Trammel (214) 517-0562

W. TEXAS R/C RACEWAY 3477 Lee Blvd., El Paso Hector (915) 772-1382

FINISH LINE R/C RACEWAY

Bay City (409) 244-2592 (Continued on page 198)

# **NOT JUST ANOTHER PRETTY FACE**

# "All of my products have extensive research and development behind them to be truly new and innovative."

We all know Dan's presence at an RC race is great fun and his sportsmanship awards emphasize the positive aspects of RC racing.



**BANANA LUBE** 

of Dan's RC Stuff. For instance, the motor spray and ba-

nana lube, are, non toxic, for

excitement of race day,

you realize the benefits

#10019 real. The spray doesn't melt your plastic parts, and the lube does work great.

SEND \$2.00 FOR CATALOG AND DECALS.

"NOW WE'RE HAVING FUN"



MOTOR SPRAY #10010

DAN'S RC STUFF 9525 COZYCROFT AVE.#C CHATSWORTH, CA 91311

Dan's new

battery bars are designed for easy use and high conductivity. They're even gold plated for non corrosion.

Great ideas like these, plus motorhomes, body foams, Dan's stands, and more, make the choice of Dan's RC Stuff,



"GOLD BARS" #10027

# M INIATURE AUTO SPECIALIST R/C RACING PRODUCTS "The Winning Advantage"

SOLAR SYSTEM





002 \$2 00 SH PART #1001 \$2 00 SH

- Totally new concept in the prevention of runaways and gliches due to receiver power loss.
- Put up to 1.5 volts directly into your B.E.C. circuit of your receiver continuously. Works in any amount of daylight.
- Weighs only 9 grams
   Works great on all types R/C cars planes and boats
- More cells. Can be wired in sequence for more power.

- If you are into matching your own cells
- If you are tired of soldering and unsoldering packs to find the worst cell
- The Zap Stick allows you to condition and cycle your new cells by being able to assemble them into a 6 or 7 cell pack. Charge then discharge as many times as you wish then by using popular cell matching equipment you can know your packs performance before soldering.

PHONE ORDERS TOLL FREE!

1-800-456-1419 ASK FOR EXT. 1419

P.O. BOX 13475 • SPOKANE, WA 99213-3475

VISA Residents include 7.8% Tax MASTERCARD



Learn more about the exciting world of offshore racers, hydros, tunnel hulls, deep vees, ships, sailboats and sport boats in all scales of gas and electric!

For a sample copy of the leading R/C boat magazine, send \$1 (\$2.95 value), postage included, to:

Radio Control Boat Modeler Special Offer Air Age Mail-Order Services 251 Danbury Road Wilton, CT 06897

### TRACK DIRECTORY

(Continued from page 194)

ROADRUNNER R/C CENTRAL

5620 Bellaire, Houston, 77081 (713) 661-7574

ROADRUNNER R/C NORTH

12760 Veterans Memorial, Houston, 77014 (713) 537-7758

ROADRUNNER R/C SOUTH

12902 Player, Houston, 77014 (713) 728-2277

#### UTAH

HOBBY EXPRESS R/C RACEWAY

3150 Brinker Ave., Ogden, 84403 (801) 392-9760

LOGAN R/C RACEWAY & HOBBIES

491 South Main St., Logan, 84321 David Barnhart (801) 752-3915

#### VIRGINIA

CHESAPEAKE R/C HOBBY SHOP & RACEWAY

7112B Hull St. Rd. (360 W. Sh. Cen.), Richmond, 23225 (804) 276-5013

#### FAIRFAX RACEWAY

11340-F Franklin Farm Rd., Herndon, 22071 Eric Zelman (703) 471-4499

#### **B & H HOBBIES RACEWAY**

Rt. 10, Box 178, Mechanicsville, 23111 (804) 746-2758

#### POOR BOY'S HOBBIES & RACEWAY

Rte. 6, Box 31, Mechanicsville, 23111 Allen, Nancy, or Rick (804) 746-5184

#### RICHMOND R/C RACE CLUB

6112 Hudswell Ln., Richmond, 23234 Ron Birckhead

#### CROZET OFF-ROAD RACE TRACK

Rt. 240, Crozet 22932 Chuck Seal (804) 823-4121 (days) (804) 823-2099 (nights)

#### WASHINGTON

R/C CAR CLUB OF SPOKANE

N. 1920 Sargent Rd., Spokane, 99212 Deanna Schram (509) 928-0503

#### SEATTLE R/C AUTO RACERS

Tom O'Hara (206) 784-9656 or Ed Hagan (206) 271-0461

TUNE IN NEXT MONTH FOR MORE TRACK DIRECTORY

# Today's Hobbies & Toys

Save Big Bucks! Make your hobby dollar go further!

BIG SALE ON MRC CAR PARTS !!! 50% AND MORE OFF!

From time to time we have perfectly good RC Car items that are slightly shopworn from our stores.......We will send you a list. We are building up a mailing list of serious RC Car Drivers, so that we can send you our bargain list when we have something really super !!! Cox Gas Cars...... CALL, WRITE, FAX, for our super low price!

We have great prices on MRC & Aristocraft Radios & Speed Controls.

Got Tire Troubles ? Have we got tires for You !! Check our prices !!!

"All we ask is that you give us a chance to please you with our service!" Send us \$1.00, or 4-25¢ stamps for 4 mailings during next 6 months.

Dept. C, PO Box 3188, Warminster, Pa. 18974 (215) 957 1047 FAX 957 1341

# R/C Car Action Decal

THE WORLDS PREMER BY CAR MAGAZINE

CAR A CHILD CAR MAGAZINE

CAR A CHILD CAR MAGAZINE

CAR A CHILD CAR A CHILD N

CAR A

By popular demand, we now have 4"x6" sheets of assorted Car Action Decals for your R/C Car. These high-quality pressure-sensitive decal sheets come in five different colors: Black, Red, White, Gold and Blue. Each color sheet is \$2, which includes postage and handling. For-

eign payment (including Canada and Mexico) must be made in U.S. funds and drawn on a U.S. bank, or by international money order. Send to: R/C Car Action Decals, 251 Danbury Rd., Wilton, CT 06897

Please sen	d medecal
sheets in [	☐ Black ☐ Red
☐ White ☐	Gold  Blue
I have encl	osed \$
Name	
Address _	
City	
State	Zip



# A SPECIAL MESSAGE

# TO RETAILERS

mAGINE the benefits of drawing many more regular customers into your store every month. Imagine adding a popular, profitable—and returnable—hobby product to your store. By stocking Model Airplane News, Radio Control Car Action and Radio Control Boat Modeler, you'll accomplish both! These are the most informative and entertaining modeling magazines available to the R/C consumer—and they're in tremendous demand. These magazines will actually stimulate more sales of R/C Airplanes, Cars, Boats and accessories for you.

If you're not already stocking Air Age magazines, please call us toll-free and we'll let you know how they can make money for you.

Call Kathleen Toll-Free at

1-800-243-6685

(in CT 203-834-2900)

(dealer inquiries only)

Air Age Publishing • 251 Danbury Road • Wilton, CT 06897

ART01#9

#### **ADVERTISER INDEX**

AGI Manufacturing	
A&L Manufacturing	4
Ace Hardware ,	111
Advance Engineering & Mfg. Co	65
Advanced R/C Car Book	160
Aerotrend	191
A.J.'s R/C	113
Alcraft	
American Modeler	7
America's Hobby Center	
Andes Hobbies	168-169
A.P.M. Custom Hobby, Inc. Associated Electric	101
Associated Flootric 3.0	6-07 128 C3
Autographics of California	100
Pop Cothuges	110
B&B Software	110
Badger Air Brush	1/4
Basics of R/C Cars	
Bennett Equipment	134
Boca Bearing Co	122
BoLINK R/C Cars, Inc.	81
Bru-Line Industries	
Bullet/J-Car	69
Bullet Racing Products	176
Central Model Marketing	
Cheetah Racing	128
Chicago Model Hobby	120
Competition Batteries	
Competition Electronics Inc.	91
Composite Craft	
Dahm's Racing Bodies	98
Dan's RC Stuff	194
Design Ingenuity Enterprises Inc.	104
Doctor J's R/C Warehouse	144
Edge Products	
ERI	
ESP, Inc.	
Futaba Corp.	
GLD Racecars, Inc.	
Global Hobby Dist.	125, 165
Great Northern Hobbies	
Hobbico	137
Hobby Dynamics Distributors	99, 143, 167
Hobby Etc.	144

Hobby Shack	34-35
Horizon Hobby Distributors	200
Imex Model Co., Inc	193
Island Hobbies	180
J.G. Manufacturing	
J&M Hobbies	
J-Car/Bullet	
Koenig Art Emporium	38
Kyosho	171, 173
Lazer Lite	191
Litespeed	107
M.A.N. News	
McAllister Racing	9
Miniature Auto Specialties	198
Miracle Speedway	162
MK Models	183
Model Craft Manufacturing	
Model Racing Products	. 166, 201
Model Rectifier Corporation	15, C4
Moody Automotive	174
Mr. D.A. Graphite	
Omni Models	130-131
OWI Incorporated	180
Paragon Racing Products	
Parma International Inc 19, 71,	113, 18
Performance Hobby	19
Periphex	120
Power Pak	
Product Design, Inc	141
Progressive Technologies	17
ProLine U.S.A	. 126, 172
Pro Stock Graphics	134
Quarter Flash	113
Racer's Choice R/C	43
RAm	11
R.C.B.M. Free	198
R.C.B.M. News	138
R.C.C.A. Back Issues	196-197
R.C.C.A. Buyer's Guide	
R.C.C.A. Charger Plans	198
R.C.C.A. Decals	
R.C.C.A. Subscription	

.C. Hoddies	
I.C. Innovations	
/C International	 139
ICK	
I.C. Magic	
/C Race Center	 13
/C Race Prep	 10
VC U.S.A., Inc	 174
C World Hobby Center	 18
letailer Ad	 20
liedel Graphics	
lobinson Racing Products	
on Charles & Associates	
loyal Products	
PM	
anyo	
cat Racing	 10
ee's Precision Machine Works	
heldon's Hobbies	
pace Age Technologies	
S. Industries	
tormer Hobbies	
MS Products	
eam Losi	
ekin Electronics, Inc.	
he Finest R/C	 10
horp Manufacturing, Inc	 17
oday's Hobbies	
ower Hobbies	
raxxas Corporation	
RC	
rinity Products	
winn-K	
wister Motors	
ctor Engineering	
RP Inc.	
Vanted	
Villing Hobbies	
Vorld Engines Inc.	. 1